

ESTABLISHED 1913

WALTER H. FLOOD (1885-1951)

312/493-1512

RAYMOND J. FLOOD, P.E.

PAUL E. FLOOD, P.E.



KALAMAZOO OFFICE:  
7509 S. WESTNEDGE AVE.  
PORTAGE, MICHIGAN 49081  
616/327-7095

## WALTER H. FLOOD & CO., INC.

### MEMBER

AMERICAN SOCIETY FOR TESTING & MATERIALS  
AMERICAN PUBLIC WORKS ASSOCIATION  
AMERICAN CONCRETE INSTITUTE  
ASSOCIATION OF ASPHALT PAVING TECHNOLOGISTS  
CONSULTING ENGINEERS COUNCIL  
ILLINOIS SOCIETY OF PROFESSIONAL ENGINEERS  
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS  
AMERICAN SOCIETY OF CIVIL ENGINEERS  
CHICAGO BUILDING CONGRESS  
ASSOCIATED SOIL & FOUNDATION ENGINEERS, INC.  
ASSOCIATION OF ENGINEERING GEOLOGISTS  
CONSTRUCTION SPECIFICATIONS INSTITUTE

### ENGINEERS

6102 SO. BLACKSTONE AVE.  
CHICAGO 60637

June 13, 1973

INSPECTION AND TESTING OF  
MATERIALS AND STRUCTURES  
SPECIFICATIONS AND REPORTS  
PHYSICAL AND CHEMICAL TESTS  
RESEARCH AND CONSULTATION  
CONCRETE CORE CUTTING  
FOUNDATION INVESTIGATION  
FACILITIES INSPECTED  
BY CEMENT & CONCRETE  
REFERENCE LABORATORY

LoBue Excavating Company  
344 East 16th Street  
Chicago Heights, Illinois 60411

EPA Region 5 Records Ctr.



303306

Attention: Mr. S. LoBue

Re: Investigation No. 7205-0068  
Application for Permit to Develop  
and Operate a Solid Waste  
Management Site  
Sauk Trail and CMSP & PRR  
South Chicago Heights, Illinois

Gentlemen:

Enclosed is the completed permit for the Solid Waste Management site at  
the above location.

If you have any questions concerning this report please do not hesitate to  
call upon us.

Respectfully submitted,

WALTER H. FLOOD & CO., INC.

Raymond J. Flood

Registered Professional Engineer  
Illinois 21775

RJF:bc

3-

WALTER H. FLOOD & CO., INC.

14  
REFERENCE  
SITE NAME LoBue #12  
SITE ID 120980909000

Investigation No. 7205-0068  
Application for Permit to Develop and  
Operate a Solid Waste Management Site  
Sauk Trail and CMSP & PRR  
South Chicago Heights, Illinois

Prepared for

LoBue Excavating Company  
344 East 16th Street  
Chicago Heights, Illinois 60411

June 13, 1973

## APPLICATION FOR PERMIT TO DEVELOP AND OPERATE A SOLID WASTE MANAGEMENT SITE

Table of Contents

	<u>Page No.</u>
Application for Permit	1 - 10
Supplemental Text	11 - 16
Appendix	
U.S. Geological Survey Map Dyer Quadrangle	17
U.S. Geological Survey Map Steger Quadrangle	18
Soil Boring Logs	19 - 22
Boring Log Explanation	23
Standard Practice for Plugging Boreholes	24 - 26
Topographic Survey of Site	27
Surficial Geology of Site	28
Soil Profiles	29, 30
Soil Profile Legend	31
Bedrock Topography	32
Grainsize Classification Tests	33 - 35
U.S.D.A. Classification Chart	36
Summary of Observation Well Data	37
Piezometric Surface of Ground Water	38
Piezometer Installation Procedures	39, 40
Laboratory Tests of Ground and Surface Water	41 - 44
Proposed Final Grades	45
Typical Fill Cross Section	46



APPLICATION FOR PERMIT  
TO DEVELOP AND OPERATE  
A SOLID WASTE MANAGEMENT SITE

In Accordance With The Environmental Protection Act

All information submitted as part of the Application is available to the public except when specifically designated by the Applicant to be treated confidentially as regarding a trade secret or secret process in accordance with Section 7(a) of the Environmental Protection Act.

APPLICATION MUST BE SUBMITTED IN DUPLICATE

DO NOT WRITE IN THIS SPACE - FOR E.P.A. USE ONLY.

\_\_\_\_\_ County - Land Pollution Control

Application Received: \_\_\_\_\_ Permit Number \_\_\_\_\_

Reviewed by: Geol. ( ) Engr. ( ) Op. ( ) \_\_\_\_\_ L.P.C. Region \_\_\_\_\_

Date: \_\_\_\_\_ Plan File Ref: \_\_\_\_\_

Letter Attached: \_\_\_\_\_ Permit: Granted \_\_\_\_\_ Denied \_\_\_\_\_

Notice To: \_\_\_\_\_ Date: \_\_\_\_\_

Type of Solid Wastes Site:

- ( ) Sanitary Landfill  
( ) Incinerator  
( ) Composting  
( ) Other \_\_\_\_\_

PART I - APPLICANT INFORMATION

A. SITE IDENTIFICATION

1. Name of Applicant LoBue Excavating Company  
(Person responsible for operation)

2. Address of Applicant 344 East 16th Street  
(Street, P. O. Box, or R. R. #)

Chicago Heights, Illinois 60411  
City State Zip Code

Telephone: 757-6666  
(Area Code) (Number)

3. Name of Land Owner FIRST NATIONAL BANK IN CHICAGO HEIGHTS AS TRUSTEE U/I/R 162  
(If same as above, so indicate)

4. Address of Land Owner 1648 HALSTED  
(Street, P. O. Box, or R. R. #)

Chicago Heights ILLINOIS 60411  
City State Zip Code

5. Name of Site \_\_\_\_\_

6. Address of Site Sauk Trail, CMSP & PRR  
(Street, P. O. Box, or R. R. #)

South Chicago Heights, Illinois 60411  
City State Zip Code  
Cook County Bloom Township

7. Land ownership (Check Applicable Boxes)

(x) Presently Owned by Applicant ( ) To Be Leased by Applicant For \_\_\_\_\_ Years  
( ) To Be Purchased by Applicant ( ) \_\_\_\_\_ Years of Lease Remaining: termin-  
nation date of lease \_\_\_\_\_  
Operated by: Ill. Corporation (x) Partnership ( ) Government ( )  
Individual ( ) Other ( )

B. SITE BACKGROUND (Check Applicable Box or Boxes)

8. (x) This is an existing operation begun April (mo.) 1952 (yr.).  
( ) This is a proposed operation.  
( ) This is a proposed extension of an existing adjacent operation:  
Illinois E.P.A. Permit No. \_\_\_\_\_: No Illinois E.P.A. Permit ( ).

## PART II - LOCATION INFORMATION

A. ZONING AND LOCAL REQUIREMENTS

9. Present zoning classification of site Industrial

10. Does present zoning of site allow the proposed usage? (x)Yes ( )No.

11. Restrictions (if any) None

12. Check applicable boxes which describe the use of adjacent properties surrounding site.

	Residential	Commercial	Industrial	Agricultural	Others*
a. North	( )	( )	(x)	( )	( )
b. East	( )	( )	(x)	( )	( )
c. South	( )	( )	(x)	( )	( )
d. West	( )	( )	( )	(x)	( )

\*SPECIFY USE CLASSIFICATION \_\_\_\_\_

13. a. Are there any permits, operational requirements, licenses, or other requirements or restrictions by any municipality, planning commission, county, county health department, state agency, or other governing body?  
( ) Yes (X) No If yes, list below. \_\_\_\_\_

- b. Have these requirements, licenses or restrictions been approved by the agency or governing body having jurisdiction? ( ) Yes ( ) No
- c. If the answer to (b) is yes, include photocopies of supporting documents.

B. LOCATION

14. Attach a copy of the United States Geologic Survey (U.S.G.S.) topographic quadrangle map of the area which contains the site. (7.5 minute quadrangle, if published).

Quadrangle Map Provided: Dyer, Ill-Ind., 1953 Steger, Ill., 1953  
(Name) (Date)

15. a. Outline on the U.S.G.S. topographic quadrangle map the location and extent of the site.
- b. Provide a legal description of the site. (Typewritten on attached sheet.)

about 25 acres in \_\_\_\_\_ Quarter, NE Quarter, \_\_\_\_\_ Quarter  
of Section 33, Township 35N, Range 14 E of 3rd P.M.

- c. Provide State Plane coordinates of the southwest corner of the site, using the State Plane Coordinate System:

\_\_\_\_\_ feet east, \_\_\_\_\_ feet north or origin, (X) east zone  
( ) west zone

16. General characteristic: (Flood Plain, Hillside, Field, Strip Mine, Quarry, Gully, Gravel Pit, Swamp, etc.)  
Briefly describe: Formerly a clay mine; in process of being filled for

about 20 years

17. Plot the following information on the U.S.G.S. quadrangle topographic map, if within the site or adjacent to the outer perimeter of facility:

- a. Wells (domestic, industrial, etc.)  
b. Public water sources (wells, stream, etc.)  
c. Residences or residential areas, commercial facilities, sewage treatment facilities, industries, institutions, etc.  
d. Other pertinent facilities not shown on topographic map such as diverted streams, strip mines, ponds, etc.

If scale of quadrangle map is not sufficient, show the above items on a separate topographic map (See Part IV - A - 23).

## PART III - SITE CHARACTERISTICS

### A. GEOLOGY - HYDROLOGY

NOTE: The instructions for this Part of the Application should be read carefully prior to initiating the data-gathering program for the site.

Provide subsurface information in comprehensive detail, sufficient to allow for thorough evaluation of the hydrologic and geologic conditions beneath and surrounding the site. This data must fully describe the hydrogeologic interrelationships of the landfill facility, local ground waters, and surface waters. All information requested in sections 18 through 22 should be integrated and presented as a detailed hydrogeologic report.

### B. GEOLOGY

#### GENERAL GEOLOGIC SETTING

18. Provide a brief description of the general geography of the region in which the site is located, and a summary of the hydrogeologic conditions typical of that portion of Illinois.

#### TYPE AND EXTENT OF SUBSURFACE MATERIALS

19. Provide a complete log (description) of each boring made during the exploratory program, and include all other pertinent data so obtained.
20. Include the following information regarding the bedrock, if encountered during the boring program:
- Depth(s) to bedrock.
  - Lithology (physical character) and hydrologic characteristics of the bedrock formation.
  - Name and age of the formations encountered during the boring operation and (or) which crop out on or adjacent to the site.

### C. MATERIALS CLASSIFICATION AND ANALYSIS

21. Provide the following information for samples taken during the boring operation:
- textural classification (U.S.D.A. system)
  - particle size distribution curves for representative samples
  - coefficient of permeability - based on field and (or) laboratory determinations
  - ion-exchange capacity and ability to adsorb and "fix" heavy metal ions

### D. HYDROLOGY

22. Provide the following information regarding the hydrologic flow system in the area of the site:
- Depth to water in boreholes at time of boring completion and periodic measurements until the water level has stabilized.

- b. Rate(s) and direction(s) of ground-water movement.
- c. A narrative description (with diagrams) of the design and installation procedures for all piezometers installed at the site. This shall include both water-level measuring piezometers and those installed for permanent use as water-quality monitoring points.
- d. An analysis of the background ground-water quality, as per those constituents listed in the Instructions. Attach a copy of the laboratory report.
- e. An outline of the procedures, devices, and personnel to be employed for the collection of periodic ground-water samples from the monitoring point(s) installed at the site.

## PART IV - CONSTRUCTION PLANS AND SPECIFICATIONS

### A. SITE DEVELOPMENT PLAN

- 23. Provide a detailed topographic map of the existing site (Scale 1" = 200' or larger) showing 5-foot contour intervals on sites (or portions thereof) where the relief exceeds 20 feet, and 2-foot contour intervals on sites (or portions thereof) having less than 20 feet of relief. This map should show all buildings, ponds, streams, wooded areas, bedrock outcrops, underground and overhead utilities, roads, fences, culverts, drainage ditches, drain tiles, easements, streets, any other item of significance, including legal boundaries.

Show the location and elevation of borings as described in Part III - 19, 20.

- 24. Provide a separate map, at the same scale as that above, of the developed site showing the following:
  - a. All changes in topography dictated by design and operational factors.
  - b. All surface features (as specified in IV - A - 23) both unaltered and modified, and installed as part of the facility. This shall include all new construction with location plans for berms, dikes, dams, earth barriers, surface drainage ditches, drainage devices (culverts, tiles), fencing, access roads, entrance(s), utilities, buildings, sanitary facilities, monitoring well(s), streams, ponds, mines, and any other special construction as may be required to comply with the provisions of the Rules and Regulations.
- 25. Provide a topographic map of the closed and covered site showing final contours, with an interval of 5 feet if relief is greater than 20 feet, and intervals of 2 feet if relief is less than 20 feet.
- 26. Provide cross sections or profiles (Scale 1" = 200' or larger) of the developed site to clearly indicate: (Minimum of three cross sections recommended)
  - a. Proposed fill areas
  - b. Sequence of placement and total compacted thickness of each lift
  - c. Thickness of cover material for each lift
  - d. Slope and width of working face for each lift
  - e. Slope of completed fill with final cover in place
  - f. Subsurface strata to a minimum depth of thirty feet below the base of the fill material
  - g. Earth barriers, berms, dikes and other barriers, including essential dimensions of each



27. Provide plan views (Scale 1" = 200') and cross sections of the leachate collection and treatment system, if utilized, including the following information:

- a. Type, location and construction of subsurface collection system, and all attendant devices.
- b. Location, size, depth, volume, and surface elevation of treatment lagoon(s) if used.
- c. Detailed written narrative of the method and processes of the treatment system, and program for monitoring the performance and effectiveness of the treatment system.
- d. Discharge point(s) of effluent.

B. SCHEDULE OF CONSTRUCTION

28. Attach a typewritten narrative supplemented by indications on the plans of the sequence of areas to be filled. Estimate the date of beginning and ending of each phase of construction and operation.

C. CONSTRUCTION REQUIREMENTS

29. Attach a typewritten narrative supplemented by indications on the plans of provisions to be made for:

- a. Prevention of surface-water pollution.
- b. Control of gas migration.
- c. Elimination of flood hazard, if any.
- d. Employee facilities.
- e. Access to the site.
- f. Measuring quantity of solid waste delivered to the site.

PART V - OPERATING PLAN

A. SOURCE AND VOLUME

30. Indicate the estimated volume of each of the following sources and types of solid waste the facility will handle during each day of operation; each week of operation; each year of operation. Specify any additional information regarding refuse source and volume.

<u>SOURCE</u>	<u>TYPE</u>	<u>DAILY VOL.</u>	<u>WEEKLY VOL.</u>	<u>ANNUAL VOL.</u>
a. Residential				
b. Commercial				
c. Industrial	foundry sand, slag, cinders	60 c.y.	300 cu.yds.	15,600c.y.
d. Agricultural				
e. Other (Describe)	soil, clay	10 c.y.	50 c.y.	2,600 c.y.

31. At the above projected rate of use, what is the expected useful life of the facility? 30 years
32. Will water treatment or wastewater treatment sludge be accepted at the facility  
( ) Yes (X) No. If the answer is yes, all pertinent information requested in Part VI of the Application form must be provided.
33. If "hazardous wastes" (other than waste water sludges) will be accepted at the facility, list these wastes, provide a complete chemical analysis of each, and attach a detailed description of the special procedures to be used for their disposal at the facility.

**B. DESCRIPTION OF OPERATING PROCEDURES**

34. Attach a typewritten plan of operation to accompany this application. This plan should include the following subjects:
- a. Method of landfilling (trenching, area fill)
  - b. Time schedule for filling and daily covering

**C. OPERATING REQUIREMENTS**

35. Attach a typewritten description of provisions for:
- a. Personnel for supervision and operation
  - b. Traffic control
  - c. Designation of unloading area
  - d. Cell size and construction
  - e. Provisions for blowing litter control
  - f. Rodent control
  - g. Fly control
  - h. Bird control
  - i. Dust control
  - j. Odor control
  - k. Management of surface water
  - l. Erosion control
  - m. Final cover and final slopes
  - n. Monitoring program for gas
  - o. Reuse and recycling operations
  - p. Monitoring program for groundwater (See Part III - D - 22)

36. Provide a list of equipment to be used for the landfill operation:

ITEM(S)	MODEL NUMBER	NO. OF UNITS IN OPERATION	DESCRIPTION
	D-7	1	Dozer

PART VI - ON - SITE SLUDGE DISPOSAL

The information requested in this Part of the Application form must be provided only if water treatment or wastewater treatment sludge is proposed to be accepted for disposal at the site.

37. Indicate the type of sludge to be accepted at the facility for ultimate disposal: none

☐ Water treatment

☐ Wastewater treatment

☐ municipal

☐ filter cake

☐ raw

☐ industrial

☐ sludge cake

☐ digested

☐ combined

☐ heat-dried

38. Provide a brief narrative of the wastewater or water treatment processes and operations utilized at the treatment facility generating the sludge in question.

39. Provide a brief narrative of the sludge de-watering and (or) sludge drying operations utilized at the treatment plant. What is the expected solids content (by weight) of the processed sludge? none

40. If industrial or combined wastewater sludges are proposed to be deposited at the site, provide a comprehensive chemical analysis of same. Attach a copy of the laboratory report as part of the Application. Provide a brief description of the manufacturing process(es) which results in the generation of the industrial wastewater including all chemical reagents used during such processing.

41. Provide a reasonable estimate of the projected volume of processed sludge to be deposited at the site on a unit time basis. Specify any additional information regarding sludge generation.

<u>SOURCE</u>	<u>WEEKLY VOLUME</u>	<u>MONTHLY VOLUME</u>	<u>ANNUAL VOLUME</u>	<u>OTHER INTERVAL</u>
A. Municipal	none			
B. Industrial	none			
C. Combined	none			

INTERVAL

42. Provide a brief statement describing the method of sludge conveyance to the refuse disposal site from the treatment facility. This shall include an attached typewritten list of equipment and personnel to be used for sludge handling and transport.

43. Outline in a concise statement the operational procedures to be used on-site to properly and expeditiously dispose of the sludge at the operational portion of the facility. Describe the provisions to be made available for an odor control program if nuisance conditions arise from the disposal of raw or partially digested sludges.

44. Attach a typewritten description supplemented by indications on the plans of provisions for final grading and, if applicable, revegetation of the completed landfill areas. State what arrangements will be made for the repair of eroded, cracked and uneven areas, and any other maintenance of the site until its pollution potential is adjudged exhausted.

45. By signature affixed to this Application for Permit the Applicant affirms his intent to record description and plan of the completed site with the county official responsible for maintaining titles and records of the land, in accordance with the Rules and Regulations of this Agency, if granted a Development and/or Operating Permit.

I hereby affirm that all information contained in this Application is true and accurate to the best of my knowledge and belief.

Signature of Applicant: LOBUE EXCAVATING COMPANY Dec 12, 1974  
Date  
Attest: Charles G. To Be V. J.  
Date

Walter H. Flood & Company, Inc  
Signature of Engineer: Raymond J. Flood June 14, 1973  
Date  
Registered Professional Engineer  
Illinois 21775  
Illinois Reg. No.: \_\_\_\_\_

Attest: \_\_\_\_\_  
Date

(Seal)

Signature of other person, technical and non-technical, who has supplied data contained in the submittal.

\_\_\_\_\_  
Signature Date

\_\_\_\_\_  
Reg. No., Position, Title, Etc. (Seal)

\_\_\_\_\_  
Signature Date

\_\_\_\_\_  
Reg. No., Position, Title, etc. (Seal)

## SUPPLEMENTAL TEXT TO APPLICATION FOR PERMIT

Part III - Site CharacteristicsA. Geology-Hydrology: Field Investigation

Four test borings were taken on the site (for logs see Appendix). The locations of these borings are plotted on the enclosed diagram of the topographic survey (Appendix sheet 27). One test boring was cored 5 feet into bedrock to verify the lithology of the bedrock and the other borings were stopped at "refusal," thought to be the bedrock surface. The field investigation was made on April 25, May 22, May 23, and May 24, 1972. A truck-mounted drill rig was used. Split tube samples were taken from each borehole and the standard penetration (number of blows of a 140-inch hammer dropping 30 inches to drive the 2-inch outside diameter split-tube one foot) was taken and recorded on the boring log. Ground water levels were recorded during drilling and after drilling was completed. After completion of the drilling a 2-inch pvc well point was installed in each borehole. The data on the well installation is included in the appendix, Page 37. Each well point is also shown symbolically on the soil profiles (Appendix sheets 29-30). The procedures used in the installation of the well points are also included in the appendix. Periodic ground water levels were taken in the wells and samples taken from the test wells on February 22 and 23, 1973, and the samples submitted to a laboratory for testing. The results of the tests of the water from the wells are also included in the appendix of this report, Pages 41-44.

A topographic survey was made of the site, and is included herein. A research of available geological and hydrological data from the company files was made. References used in the study include:

- U.S. Geological Survey, Hydrologic Atlases HA209, 301.
- Geology of the Chicago Region, Illinois State Geological Survey, Bulletin 65
- Pleistocene Stratigraphy of Illinois, Illinois State Geological Survey, Bulletin 94
- Characteristics of Soils Associated with Glacial Till in Northeastern Illinois, Agricultural Experiment Station, University of Illinois, Bulletin 665
- Summary of the Geology of the Chicago Area, Illinois State Geological Survey, Circular 460
- Mineralogy of Glacial Till and their Weathering Profiles in Illinois, Illinois State Geological Survey, Circular 347, 1963.
- Public Water Supplies of Illinois, Illinois State Water Survey, Bulletin 40 and supplements
- Water Well Logs, Illinois State Geological Survey, Urbana, Illinois.

B. Geology (See Surficial Geology, Appendix page 23)

The project site is located mostly on the terminal moraine of the Tinley Glacier. It is likely that Lake Steger, a postglacial lake, had its easterly shoreline along the project site. The Tinley glacial tills were deposited over the previously deposited Valparaiso and older glacial tills and drifts. Reference is made to two soil profiles (Appendix pages 29-30) which have been prepared from the test boring data. These test borings reveal the following identifiable geological soil and rock strata.

Tinley glacial tills. A highly impervious, generally desiccated, very tough to hard consistency clay till occurring in two borings. This clay was likely partially removed

III - Site Characteristics (continued)Geology (continued)

for excavation. Thickness was likely variable, exceeding 30 feet in the higher portions of the site.

Clay Formation Carmi Member. A small portion of the site was likely inundated by the waters of the postglacial Lake Chicago. Clay sediments deposited through the relatively quiet lake waters were encountered in one boring. These are tough in consistency, plastic, and highly impermeable.

Glacial clay tills. These clay tills were encountered in all borings and are a compressed, hard consistency, highly impervious clay with small amounts of gravel. Thickness ranges from about 10 to 20 feet.

Lemont drift. Immediately above the bedrock a silt loam-gravel-boulder drift was encountered. This drift is a highly preconsolidated noncohesive drift ranging from 10 to over 10 feet thick.

Niagran Dolomite. Test boring 2 was cored 5 feet with 100% core recovery. A thin-bedded argillaceous dolomite was encountered. Occasional jointing was observed. The bedrock is the Silurian age Niagran dolomite.

Glacial stratas. Intermittently between the till sheets, sand and silt stratas were encountered. These sheets of inter-till soils range from a few to 10 feet thick.

General Geography-Hydrogeology

The project site originally apparently sloped rapidly from east to west with an elevation difference of about 45 feet (from 685 to about 730). Along the west property line is a creek (drainage ditch), a tributary to Deer Creek, draining southward and then eventually into the Little Calumet River several miles northwesterly. Most of the surface water of the site drains into this ditch. No shallow aquifer was encountered until the sand, Lemont drift (basal aquifers) were encountered above the bedrock. The potable water source of the area is generally the Niagran dolomite.

Subsurface Exploration

The logs of four test borings are included in the appendix of this report (Pages 19-22). These borings were taken at locations indicated on the site topography map.

Bedrock

Bedrock was cored in boring 2, being encountered at a depth of 31.5 feet, elevation 666.4. At the other boring locations "refusal" was encountered at depths of about 50 to 62 feet, or at elevations 658.3, 660.9, and 650.1. Although, not cored at these other locations it is believed that the refusal depth likely indicates the bedrock surface. The cored bedrock was thinly bedded in layers of about 2 to 8 inches, and was argillaceous with numerous pin-sized solution cavities. The Niagran dolomite is Silurian in age. We have prepared a configuration of the surface of the Niagran dolomite in the general site area by plotting the data from well logs furnished by

## Part III - Site Characteristics (continued)

20. Bedrock (continued)

the State Geological Survey (Appendix Page 32). Thickness of the Silurian Niagran dolomite is expected to be in excess of several hundred feet and appears as 383 feet thick in the log of the Chicago Heights Illinois Municipal Well.

The Niagran dolomite is the aquifer for potable water for small wells of the area. The water is generally stored in a complex network of interconnected openings. The rock is generally jointed and fractured. No analysis was made of well yields in the area.

The Lemont boulder drift and its overlying sand layer are estimated to be basal drift aquifers. Piezometric water levels in these drift aquifers are common to the underlying bedrock aquifer. The use of the drift aquifers is likely very limited and no known wells in the area terminate in this aquifer.

21. Soil Classification

Representative samples from the test borings were tested in the laboratory. Textural classification was made by the U.S. Department of Agricultural System, and grainsize (Appendix, Pages 33-36).

The Tinley tills are clays, and the Valparaiso tills also are silty clay loams. Permeability tests (remolded) were conducted on representative samples of these soils and the coefficients of permeability ranged from  $2 \times 10^{-7}$  cm/sec to  $5 \times 10^{-7}$  cm/sec.

These clay fills were not tested for cation exchange capacity but reference materials indicate a high exchange capacity and ability to absorb heavy metal ions.

22. Hydrology

Ground water readings were taken in all of the boreholes and the readings recorded on the test boring logs. Two-inch ID PVC well points were installed in each of the test holes and readings taken and recorded. The summary of the observation well data is enclosed in the appendix, Page 37.

The direction of ground water flow in the Niagran basal aquifer across the site is southerly and the enclosed contour drawing, Appendix, Page 27, of the potentiometric water levels in the area as obtained from the on-site data and from the furnished well logs indicates this. No upper aquifer was encountered in the test borings, but it is assumed that ground water is present in the clays above the present creek level of about 585, and there is a gradient towards the creek.

Installation procedures for the piezometers is enclosed in the appendix, Pages 39-40.

Laboratory reports of ground water tests for wells 1, 2, 3 are enclosed (Appendix, Pages 41-44, ). The rate of flow into well 4 was extremely slow and well 4 was not sampled. The results of these tests indicate relatively uncontaminated ground water.

Ground water sampling from a selected individual well is planned quarterly. Sampling will be done from the well by bailing, by qualified personnel from a testing laboratory. Results of the tests will be forwarded.



Part IV - Construction Plans and Specifications23. Existing Topographical Map (see Appendix, Page 27)

The site has been in the process of being filled for about 20 years and formerly was a borrow for clay for brick manufacture.

24. The proposed operation is to complete the filling from present grades.

25. Proposed Grade Plan (see Appendix, Page 45)

It is planned to complete the filling to the final grades as indicated. The proposed final grades will return the site to near the same topography as prior to excavation.

26. Fill Cross-section (see Appendix, Page 46)

The fill is to be placed in lifts of a few feet and compacted with the tractor. Cover material will be placed as required daily. An area fill method is planned.

27. Leachate Collection System

Due to the nature of the proposed and existing fill little leachate generation is expected. No plans for leachate collection are included. A sample of water was collected from the creek and tested (see Appendix, Page 44). Monitoring of the creek and wells will be conducted on a regular basis. Should leachate be detected seeping from the creek slope an interceptor till can be constructed at the toe of the slope, and treatment provided or the leachate pumped to an available sanitary sewer.

28. Schedule of Construction

Plans are to recommence filling of the site upon receipt of the permit. Only a small amount of solid waste is expected to be placed in the site. At the projected rate about 30 years will be required to fill the site daily.

29. Construction Requirements

(a) Surface water pollution will be prevented by temporarily providing storage of surface water. Should contamination be detected treatment will be provided.

(b) Due to absence of petrucible materials in the fills little gas generation has been noted and little or no gas generation is expected from future fill. If gas generation is detected vent wells will be provided.

(c) Hydrologic Atlases HA209 and 301 indicate flooding as being confined to the limits of the creek banks. No change in flood plain is planned.

(d) Due to the planned intermittent operation of the site (5 to 10 trucks daily), no employee facilities are planned.

(e) Access to the site is through an existing gate as noted on the existing contour drawing, Appendix Page 28.

(f) Measuring of the quantity of solid waste delivered to the site will be by truck measurement.

Reviewed  
To be  
a note  
1/11/71

Part IV - Construction Plans and Specifications (continued)34. Operating Procedures

The area method of fill will be used. Limited use of the site is planned and disposal onto the site will be limited to essentially inert materials as noted under Section 30. Since most of the fill will be inert, little daily covering is expected. Daily cover will be provided as necessary if organic materials are noted in an occasional load of fill.

*revised - daily  
cover is mandatory  
WEC*

Time for filling of the site is estimated at 30 years.

Operating hours are from 7:00 AM to 4:00 PM on weekdays and 7:00 AM to 1:00 PM on Saturday.

35. Operating Requirements

(a) Personnel - One operator is to be provided to operate equipment. Intermittent supervision is to be provided by supervisory personnel.

(b) No traffic control is planned due to the small number of trucks anticipated.

(c) Unloading area is to be designated.

(d) Area fill is planned by progressing from east to west. Face of the unloading area is to be limited to 100 feet.

(e) No blowing litter is anticipated. Should blowing litter be involved fencing will be provided.

(f) Commercial rodent control will be provided on a regular basis.

(g) Due to inert nature of the fills, flies have not been noted. Should fly control be necessary, a commercial insect control company will be utilized on a regular basis.

(h) No bird control is planned.

(i) Sprinkling of the access road will be provided on a regular basis during dry weather.

(j) No odor control is planned.

(k) Presently surface water is being collected in a pond and run off by gravity through a ditch. The pond area appears to be a collection of surface water and when the pond is filled surface water will drain directly to the ditch at the west of the site.

(l) Final slopes will have a maximum of 4 to 5% slope, and seeding will be done to provide for erosion control.

(m) Final cover will be 2 feet of soil. Final slopes are indicated on the final grade diagram, Appendix Page 45.

Part IV - Construction Plans and Specifications (continued)

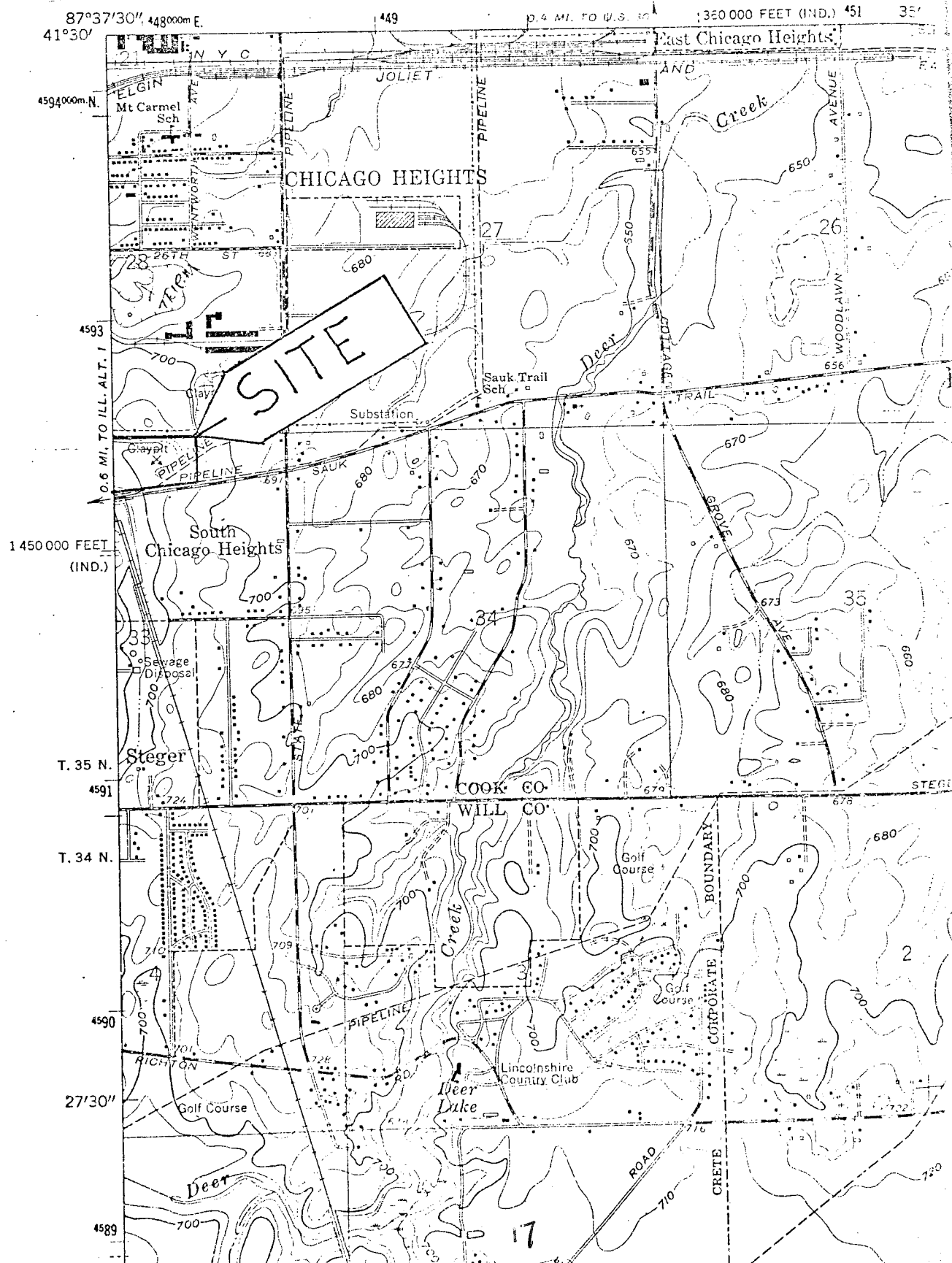
35. Operating Requirements (continued)

(n) A gas well will be installed and monitored regularly.

(o) No reuse or recycling is planned.

(p) Monitoring of ground water will be conducted regularly (see Section III, 22, Page 13 of supplemental text).

3467 11 SW  
(HARVEY)



EDUCATION

# STEGER QUADRANGLE

ILLINOIS

7.5 MINUTE SERIES (TOPOGRAPHIC)

NW/4 CRETE 15' QUADRANGLE

3657 11 S.  
1000 MET

R. 13 E. R. 14 E. 444

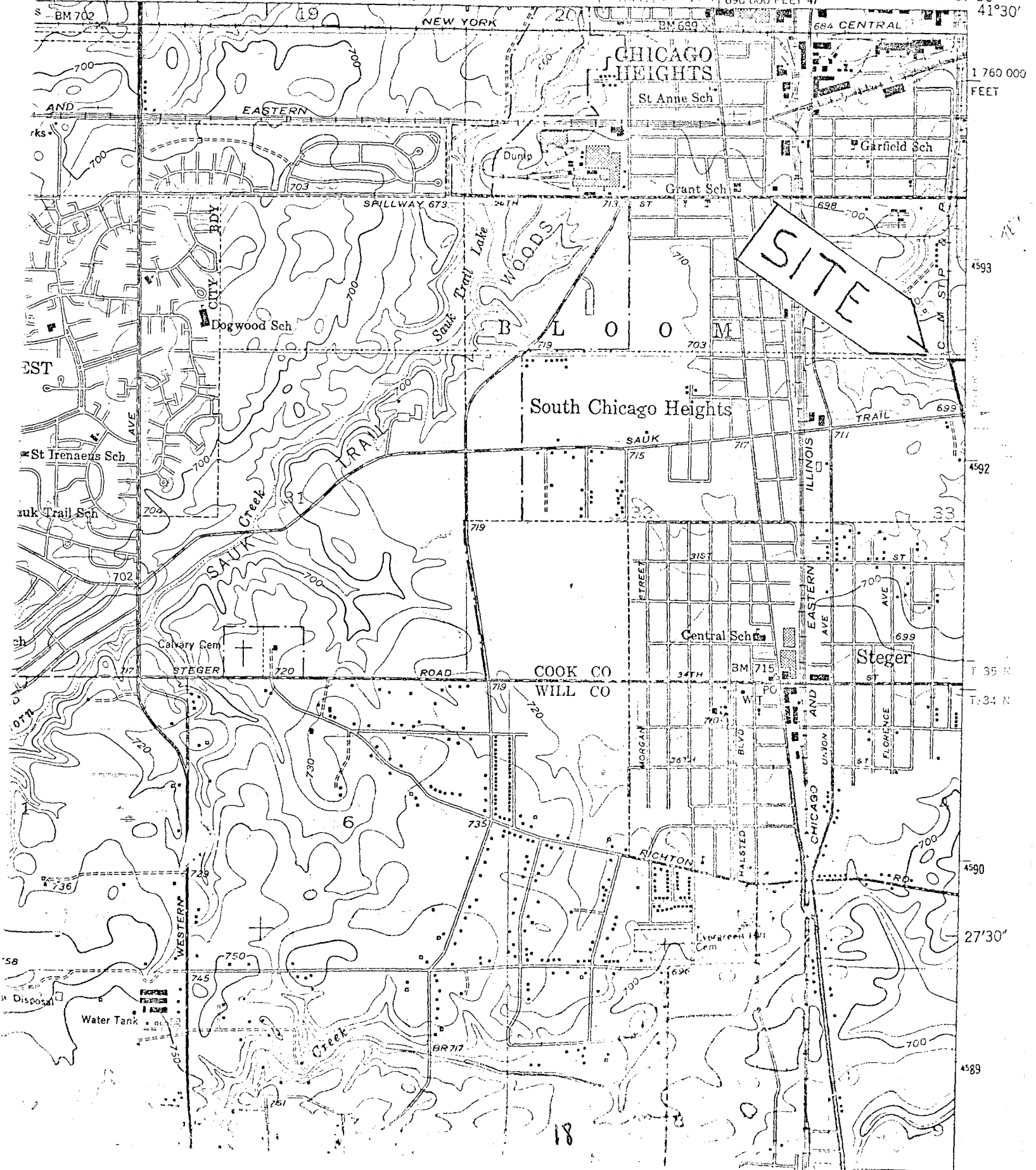
40'

445

CHICAGO (LOOP) 27 MI  
HAWK CREEK 1 690 000 FEET 447

87°37'30"  
41°30'

1 760 000  
FEET





<b>FOR:</b> Lobue Excavating Company <b>PROJECT:</b> Solid Waste Management Facility <b>LOCATION:</b> South Chicago Heights, Illinois <b>METHOD OF BORING:</b> HS&C <b>SPLIT SPOON SIZE:</b> 2 IN. <b>WT. OF HAMMER:</b> 140 LBS. <b>INCH DROP:</b> 30 <b>SHELBY TUBE SIZE:</b> <b>CASING USED:</b> 40' - 2 1/4" ID HS		<b>SOIL BORING LOG NO. 2</b>  <b>WALTER H. FLOOD &amp; CO., INC.</b> • Engineers • • CHICAGO • KALAMAZOO • <b>DATE OF BORING:</b> 5-22-72 <b>BY:</b> DL&BS:tc <b>JOB NO.:</b> 7205-0068 <b>VERTICAL SCALE:</b> 1"=10'	
<b>WATER LEVEL READINGS</b> 31.5' W.D. Surf. B.C.R. 15.2' A.C.R. 30.3' @ 24 HRS. AFTER DRILLING 24 HRS. AFTER DRILLING			

ELEV.		DEPTH		S	T	N	LR	DD	DESCRIPTION	Qu O LABORATORY O PENETROMETER X 1000				
										2	4	6	8	10
694.9	0.0								Ground surface					
693.9	1.0	1	ss	19					Black silt loam	18.5				9000+
		2	ss	27					Brown and gray clay, trace of small gravel, hard	17.4				9000+ O
		3	ss	40						18.8				9000+ O
		4	ss	32						17.1				9000+ O
		5	ss	27						19.0				9000+ O
		6	ss	28						18.5				9000+ O
		7	ss	31						19.0				9000+ O
678.4	16.5	8	ss	8					Gray fine to medium sand, little silt, loose	12.1				8500
674.9	20.0	9	ss	30					Gray silt, some fine to coarse sand, small to large gravel, boulders, very dense					O
		10	ss	19						16.0				O 8500
		11	ss	130						9.6				9000+
		12	ss	100/5"										
663.4	31.5	13	ss	104/6"					Light gray dolomite, thinly bedded, numerous small pinsized solution cavities, very dense					
		14	C											
658.4	36.5								End of boring					
									Note: Water used to core bedrock					

<b>LEGEND:</b> DEPTH—FEET BELOW GROUND SURFACE S — SAMPLE NUMBER T — TYPE OF SAMPLE N — PENETRATION, BLOWS PER FOOT L — SAMPLE LENGTH R — LENGTH OF SAMPLE RECOVERED DD — DRY DENSITY, LB. PER CU. FOOT	WO — WASHOUT A — AUGER HS — HOLLOW STEM AUGER SS — SPLIT SPOON ST — SHELBY TUBE FT — FISH TAIL C — CORE	BCR—BEFORE CASING REMOVAL ACR—AFTER CASING REMOVAL WD — WHILE DRILLING WCI — WET CAVE IN DCI — DRY CAVE IN QU — UNCONFINED COMPRESSIVE STRENGTH POUNDS PER SQUARE FOOT
--	---	--

FOR: LoBue Excavating Company		SOIL BORING LOG NO. 3	
PROJECT: Solid Waste Management Facility		WALTER H. FLOOD & CO., INC.	
LOCATION: South Chicago Heights, Illinois		• Engineers •	
METHOD OF BORING: HS		• CHICAGO • KALAMAZOO •	
SPLIT SPOON SIZE: 2 IN.		DATE OF BORING: 5-22-72	BY: DL&BS:bc
WT. OF HAMMER 140 LBS.		JOB NO.: 7205-0068	VERTICAL SCALE: 1"=10'
INCH DROP 2			
SHELBY TUBE SIZE			
CASING USED 50'-2 1/4" ID HS			
WATER LEVEL READINGS			
31.5' W.D.			
44.5' B.C.R.			
50.2' A.C.R.			
49.7' @ 24 HRS. AFTER DRILLING			
HRS. AFTER DRILLING			

ELEV.	DEPTH	S	T	N	LR	DO	DESCRIPTION	QU $\times 1000$ PENETROMETER						
								2	4	6	8	10		
713.4	0.0						Ground surface							
712.4	1.0						Black clay							
		1	ss	11			Brown and gray clay, trace of small gravel, hard to very tough	18.2	23.5	5500				
		2	ss	28										9000+
		3	ss	35				17.6						9000+
		4	ss	36				16.6						9000+
		5	ss	31										9000+
		6	ss	34				18.2						
		7	ss	16				19.0						9000+
		8	ss	19				19.0						9000+
		9	ss	15				19.3						9000+
		10	ss	20				18.8						9000+
		11	ss	16				19.9						6000
		12	ss	19				21.1						5500
		13	ss	10				22.3						4500
		14	ss	17				16.6						6000
		15	ss	20				15.7						5500
		16	ss	17				16.8						4500
673.4	40.0	17	ss	29			Gray clay, trace of small gravel, hard to very tough	16.8						4000
		18	ss	30				15.7						9000+
		19	ss	25				18.2						9000+
		20	ss	21				17.1						9000+
664.4	49.0	21	ss	100/3"			Gray silt, some fine to coarse sand, small to large gravel, boulders, very dense	15.7						7000
660.9	52.5						End of boring							

LEGEND:

DEPTH—FEET BELOW GROUND SURFACE

S — SAMPLE NUMBER

T — TYPE OF SAMPLE

N — PENETRATION, BLOWS PER FOOT

L — SAMPLE LENGTH

R — LENGTH OF SAMPLE RECOVERED

DO — DRY DENSITY, LB. PER CU. FOOT

WO — WASHOUT

A — AUGER

HS — HOLLOW STEM AUGER

SS — SPLIT SPOON

ST — SHELBY TUBE

FT — FISH TAIL

C — CORE

Wc — WATER CONTENT PERCENT

BCR — BEFORE CASING REMOVAL

ACR — AFTER CASING REMOVAL

WD — WHILE DRILLING

WCI — WET CAVE IN

DCI — DRY CAVE IN

Qu — UNCONFINED COMPRESSIVE STRENGTH

POUNDS PER SQUARE FOOT



FOR: LoBue Excavating Company					SOIL BORING LOG NO. 4				
PROJECT: Solid Waste Management Facility					<b>WALTER H. FLOOD &amp; CO., INC.</b> • Engineers • • CHICAGO • KALAMAZOO •				
LOCATION: South Chicago Heights, Illinois									
METHOD OF BORING: HS SPLIT SPOON SIZE: 2 IN. WT. OF HAMMER: 140 LBS. INCH DROP: 39 SHELBY TUBE SIZE CASING USED: 60" - 2 1/4" ID HS									
WATER LEVEL READINGS 31.5' W.D. & 49.5' 61.0' B.C.R. 58.4' A.C.R. 51.6' @ 24 HRS. AFTER DRILLING HRS. AFTER DRILLING					DATE OF BORING: 5-24-72		BY: DL&BS:bc		
					JOB NO.: 7205-0068		VERTICAL SCALE: 1"=10'		

ELEV.	DEPTH	S	T	N	L	R	DD	DESCRIPTION	Qu LABORATORY O PENETROMETER X 1000					
									2	4	6	8	10	
712.6	0.0							Ground surface						
711.6	1.0	1	ss	8				Black clay loam		22.9		5000		
		2	ss	7				Brown to gray clay, trace of small gravel, hard to very tough		22.9		5000		
		3	ss	26						17.2		9000		
		4	ss	23						15.2		9000		
		5	ss	34						12.5		9000		
		6	ss	26						16.0		9000		
		7	ss	19						16.0		5500		
		8	ss	19						17.6		7500		
		9	ss	21						19.9		6000		
		10	ss	17						18.8		7500		
		11	ss	18						19.3		5500		
		12	ss	13						22.9		6000		
682.6	30.0	13	ss	16				Gray silt, some fine sand, medium dense to loose		15.5				
		14	ss	8						24.7				
677.6	35.0	15	ss	16				Gray clay, trace of small gravel, very tough		18.2		7000		
		16	ss	21						17.4		8000		
672.6	40.0	17	ss	56				Gray fine sand, little silt, dense		12.1				
		18	ss	45						13.6				
668.6	44.0	19	ss	58				Gray silt, some fine sand, small to medium gravel, dense		13.9				
		20	ss	39										
664.6	48.0	21	ss	28				Gray clay, trace of small gravel, very tough		18.5		6000		
662.6	50.0	22	ss	21				Gray fine to medium sand, trace of silt, medium dense						
		23	ss	26										
657.6	55.0	24	ss	44				Gray silt, some fine to coarse sand, small to large gravel, occasional boulder, dense to very dense						
		25	ss	43										
		26	ss	138										
650.1	62.5							Refusal						

ELEV.	DEPTH	S	T	N	L	R	DD	DESCRIPTION	10	20	30	40	50
									Wc A NATURAL				

**LEGEND:** DEPTH—FEET BELOW GROUND SURFACE  
 S — SAMPLE NUMBER  
 T — TYPE OF SAMPLE  
 N — PENETRATION, BLOWS PER FOOT  
 L — SAMPLE LENGTH  
 R — LENGTH OF SAMPLE RECOVERED  
 DD — DRY DENSITY, LB. PER CU. FOOT

WO — WASHOUT  
 A — AUGER  
 HS — HOLLOW STEM AUGER  
 SS — SPLIT SPOON  
 ST — SHELBY TUBE  
 FT — FISH TAIL  
 C — CORE

BCR — BEFORE CASING REMOVAL  
 ACR — AFTER CASING REMOVAL  
 WD — WHILE DRILLING  
 WCI — WET CAVE IN  
 DCI — DRY CAVE IN  
 Qu — UNCONFINED COMPRESSIVE STRENGTH  
 POUNDS PER SQUARE FOOT

## TEXTURAL CLASSIFICATION

TEXTURE	SYMBOL	ABBREVIATION	SIZE	ABBREVIATION	SOIL PARTICLE SIZE
BOULDER		Bo			OVER 3.0"
GRAVEL		GR	LARGE	L	1.0" TO 3.0"
			MEDIUM	M	.38" TO .99"
			SMALL	SM	2.0mm TO .38"
SAND		S	COARSE	Co	.75mm TO 1.99mm
			MEDIUM	M	.25mm TO .74mm
			FINE	F	.074mm TO .24mm
SILT		Si			.005mm TO .073mm
CLAY		C			SMALLER THAN .005mm

## COHESIVE SOIL CLASSIFICATION

CLASS	SYMBOL	ABBREVIATION	MAJOR SOIL CONSTITUENT, % OF DRY WEIGHT		
			SAND	SILT	CLAY
CLAY		C	LESS THAN 50	LESS THAN 50	20-100
SILTY CLAY		SiC	LESS THAN 20	50-80	20-50
SANDY CLAY		SC	50-80	LESS THAN 20	20-50

CONSISTENCY	ABBREVIATION	N	QU	
VERY SOFT	VS	0-2	LESS THAN 700	IF THE CLAY CONTENT OF A SOIL IS GREAT ENOUGH THE CLAY CHARACTERISTICS DOMINATE THE SOIL MASS. CLAY BECOMES THE SOIL CLASSIFICATION WITH THE OTHER CONSTITUENTS BEING MODIFYING.
SOFT	S	3-4	700-1200	
STIFF	ST	5-8	1201-2000	
TOUGH	T	9-16	2001-4000	
VERY TOUGH	VT	17-30	4001-8000	
HARD	H	OVER 30	OVER 8000	

## NON-COHESIVE SOIL CLASSIFICATION

CLASS	SYMBOL	ABBREVIATION	MAJOR SOIL CONSTITUENT, % OF DRY WEIGHT		
			SAND	SILT	CLAY
SILT		Si	LESS THAN 20	80-100	LESS THAN 20
SAND		S	80-100	LESS THAN 20	LESS THAN 20

DENSITY	ABBREVIATION	N	
VERY LOOSE	VL	0-4	IF THE SAND OR SILT CONTENT OF A SOIL IS GREAT ENOUGH THE SOIL BECOMES NON-COHESIVE OR SEMI-COHESIVE. THE SOIL CLASSIFICATION BECOMES SAND OR SILT WITH THE OTHER SOIL CONSTITUENTS BEING MODIFYING.
LOOSE	L	5-9	
MEDIUM DENSE	MD	10-29	
DENSE	D	30-49	
VERY DENSE	VD	50 AND OVER	

## QUANTITY MODIFIERS

TERM	ABBREVIATION	% OF DRY WEIGHT
TRACE OR OCCASIONAL	TR OR OC	0-10
LITTLE	LI	11-20
SOME	SO	21-35
AND OR WITH	& OR W/	36-50

## WATER LEVELS

SYMBOL	EXPLANATION
	FINAL WATER LEVEL
WCI	WET CAVE IN
DCI	DRY CAVE IN
WD	WHILE DRILLING

## DRILLING AND SAMPLING SYMBOLS AND ABBREVIATIONS

ST	SHELBY TUBE OR THIN WALL TUBE (ASTM D-1587)	WO	WASHOUT
SS	SPLIT SPOON OR SPLIT TUBE (ASTM D-1586)	C	CORE
A	AUGER BORING OR AUGER SAMPLE	HA	HAND AUGER
HS	HOLLOW STEM AUGER		
QU	UNCONFINED COMPRESSIVE STRENGTH, POUNDS PER SQUARE FOOT		
N	STANDARD PENETRATION, BLOWS PER FOOT OF 140# HAMMER, 30" DROP, 2" O.D. SS		

Standard Practice for Plugging Soil Borings

1.0 Drilling Soil Borings - Soil borings shall be made in accordance with the recommended practice for soil borings. Drilling may be by any of the methods specified therein subject to the limitations set forth for each method.

2.0 Plugging Soil Borings

2.1 Shallow Borings - Borings of 50 feet in depth or less shall be considered as shallow borings for the purposes of this document unless they encounter one or more of the following conditions:

- A. Flowing artesian water
- B. Water containing hydrogen sulfide, sulfur dioxide, methane, or other gases
- C. Hydrogen sulfide, sulfur dioxide, methane, or other gases
- D. Bedrock

Shallow borings shall be plugged by backfilling with excavated material or suitable natural soil from the vicinity of the boring. Backfilling shall be accomplished in such a manner that the hole is filled as completely as practicable

Any boring less than 50 feet in depth which encounters one of the conditions noted above shall be considered as a deep boring and shall be plugged in accordance with the requirements for deep borings set forth in Article 2.2.

2.2 Deep borings - Any boring greater than 50 feet in depth or which encounters one of the conditions set forth in Article 2.1 shall be considered as a deep boring for purposes of the document. The plugging of deep borings shall be accomplished in accordance with the methods set forth herein. On the basis of the field logs prepared during the drilling of the boring, the hole shall be assigned to one of the categories listed below and the appropriate plugging method utilized.

	Natural Soil (A)	Cement (B)	Pressure Cement Grout (C)	Bento- nite (D)
1. Boring through Sand <u>to</u> Bedrock				
a. No groundwater	yes <sup>7</sup>			
b. Groundwater	yes			
2. Boring through Sand <u>into</u> Bedrock				
a. No groundwater	yes <sup>7</sup>			
b. Groundwater		yes <sup>1</sup>		
c. Water in rock		yes <sup>1</sup>		
d. Artesian water in rock			yes <sup>1</sup>	
3. Boring through Clay <u>to</u> Bedrock				
a. No groundwater	yes <sup>7</sup>			
b. Groundwater	yes			
4. Boring through Clay <u>into</u> Bedrock				
a. No groundwater	yes <sup>7</sup>			
b. Groundwater				yes <sup>7</sup>
c. Water in rock		yes <sup>1</sup>		
d. Artesian water in rock			yes <sup>2</sup>	
5. Boring through Clay, Sand, to/into Rock				
a. No groundwater	yes <sup>7</sup>			
b. Groundwater in sand or rock		yes <sup>3</sup>		
c. Shallow or perched water				yes
6. Boring through Clay				
a. No groundwater	yes <sup>7</sup>			
b. Groundwater	yes			
7. Boring through Sand				
a. No groundwater	yes <sup>7</sup>			
b. Groundwater	yes			
8. Boring through Alternate Strata of Sand and Clay				
a. One layer of sand	yes <sup>7</sup>			
b. One layer of clay				yes <sup>4</sup>
c. Several alternate layers				yes <sup>4</sup>
9. Borings Encountering Artesian Water				
a. Head more than 15' deep		yes <sup>5</sup>		
b. Head within 15' of surface			yes <sup>6</sup>	
c. Head above ground surface			yes <sup>6</sup>	
10. Borings Encountering Continual Flow of Gas, Sulphurous, or Other Noxious Substances at Any Depth			yes <sup>6</sup>	

## Notes:

<sup>1</sup> Grout to top of rock<sup>2</sup> Grout to minimum 5' above rock<sup>3</sup> Grout to minimum 5' above sand<sup>4</sup> Backfill to top of top clay stratum<sup>5</sup> Grout entire boring<sup>6</sup> Pressure grout at source<sup>7</sup> Borings in areas of possible high risk of contamination (proposed landfill, treatment plants, etc.) shall not be backfilled with natural soil but shall be backfilled with bentonite.

Notes (cont.):

Cement Grout shall mean Portland Cement mixed with sufficient water to provide suitable consistency for placing or pumping.

Pressure Grouting shall mean injecting cement with a positive displacement pump, or other suitable devices which will maintain a pressure higher than the artesian head.

Bentonite shall mean any processed expansive colloidal clay.

Artesian Water shall mean any water which rises above its level to within 15' of the ground surface.

Borings drilled through soils or rock with profile not described in the foregoing categories must be effectively sealed to prevent movement of water between aquifers, or leakage at ground surface.

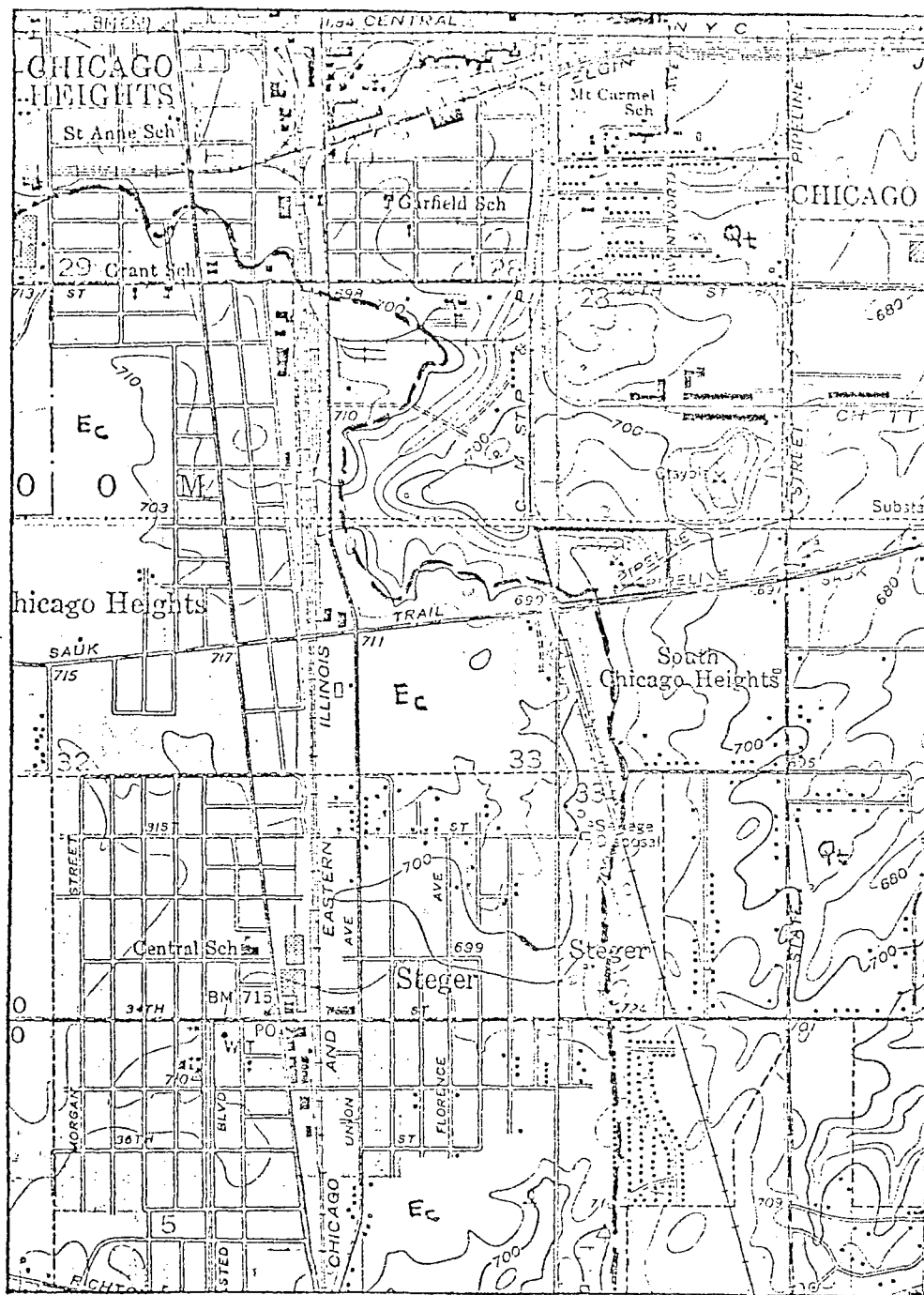
### 3.0 Special Cases

3.1 Piezometer or Standpipe Installation - Where required by the engineer or owner, a piezometer or standpipe shall be installed in the test boring upon completion of drilling. The piezometer or standpipe shall be sealed in a manner consistent with the requirements for such installation and, insofar as practicable, in conformance with the plugging methods set forth in Section 2.2 above. At such time as the piezometer is no longer required, it shall be sealed by grouting or by other appropriate means.

3.2 Holes Not Plugged - Where the requirements of the owner or engineer so dictate, holes shall be left open. Where necessary, casings shall be left in place to prevent caving of the holes or migration of fluids or gases from one stratum to another. At such time as the requirement to maintain the hole open ceases, the hole shall be plugged in accordance with the methods specified in 2.1 and 2.2 above.

3.3 Plugging Records - The driller's field notes and boring logs shall include the following information regarding the plugging of the borings:

- A. Plugging method utilized.
- B. Quantities of bentonite, grout, or other material utilized in plugging.
- C. Any unusual conditions encountered during plugging such as excessive take of grout materials, leakage around exterior of casing, etc.



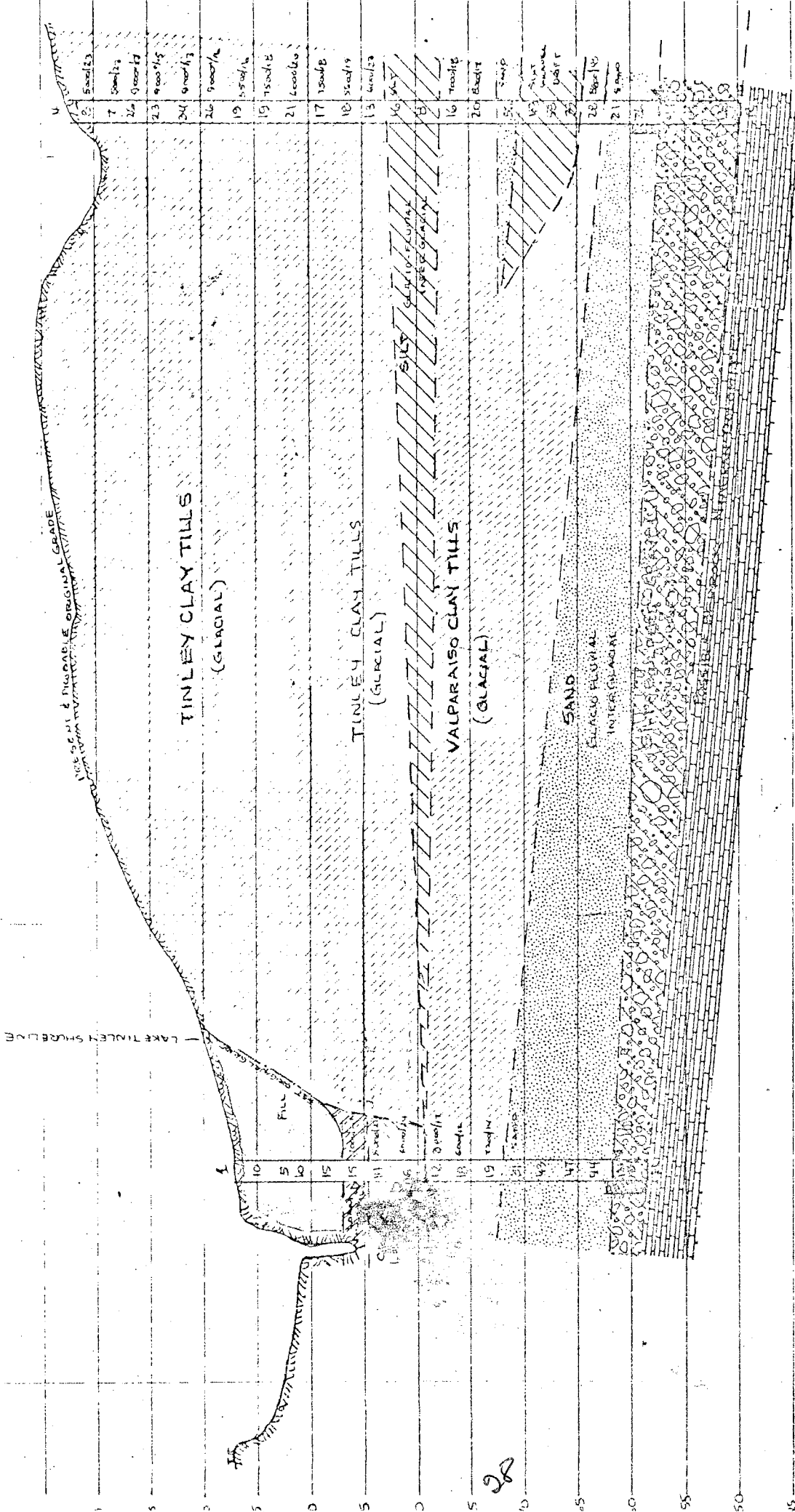
LEGEND:

- Ec** EQUALITY FORMATION CARMI MEMBER  
(LAKE STEGER) (Yellow)
- Qt** Tusley Terminal Moraine (Brown)



27

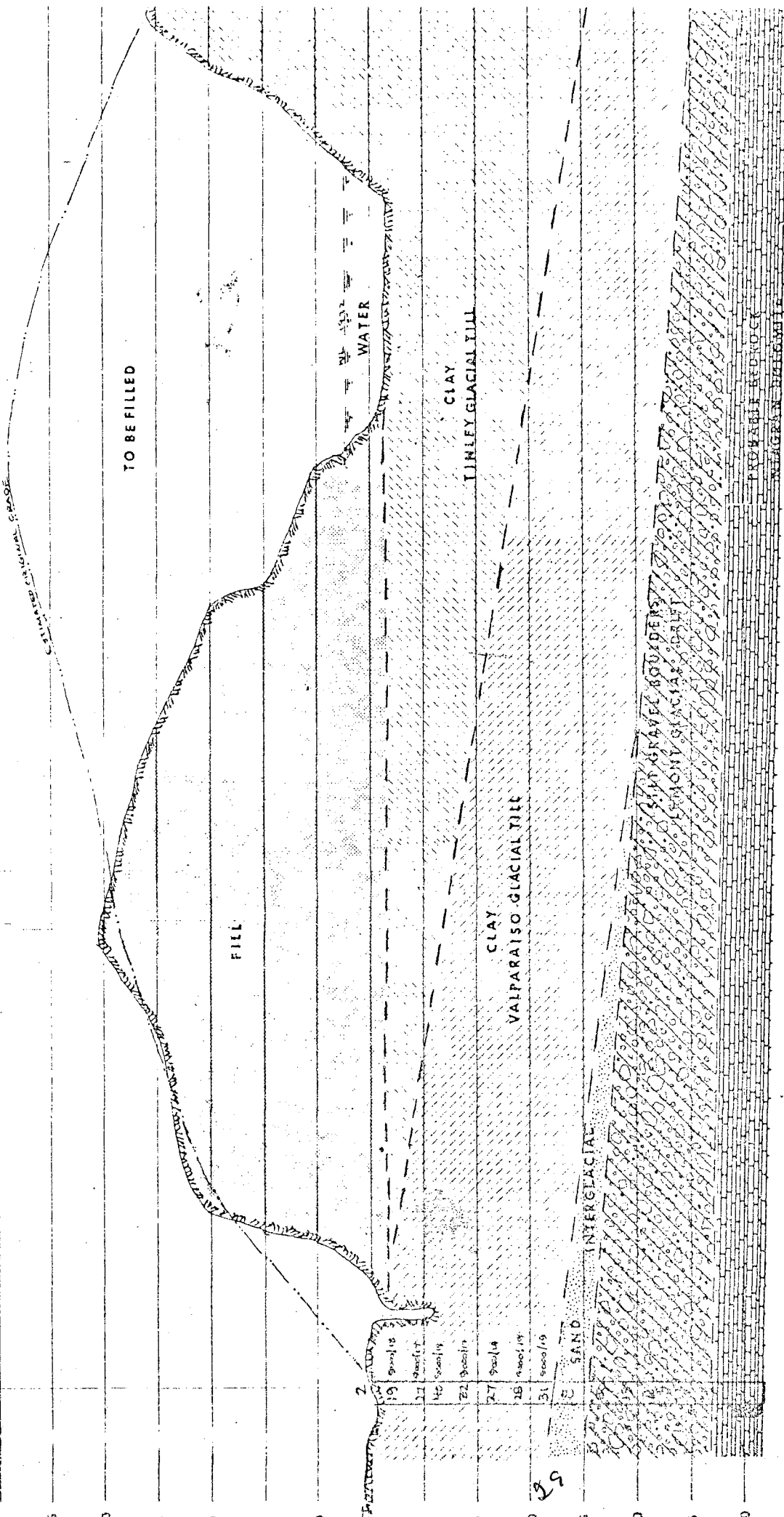
SURFICIAL GEOLOGY SOLID WASTE DISPOSAL FACILITY S. CHICAGO HEIGHTS, ILL.	
WALTER H. FLOOD & CO. INC.	
SCALE 1"=2000' ±	BY RJP
JOB / LAB NO. 72050062	DATE 6/5/73



NOTE:  
THE HORIZONTAL PROJECTIONS OF  
THE SOIL STRATA BETWEEN THE  
BORINGS HAS BEEN OBTAINED BY  
INTERPOLATION AND MAY NOT BE  
REPRESENTATIVE OF ACTUAL SOIL  
CONDITIONS BETWEEN BORINGS

LEGEND:  
SEE ATTACHED SHEET

SOIL PROF	
CHICAGO HEIGHTS	
WALTER H. FLOOD & CO. ENGINEERS - CHICAGO, ILL.	
VERT. SCALE: 1" = 10'	HORIZ. SCALE: 1" = 100'
JUNE	1900

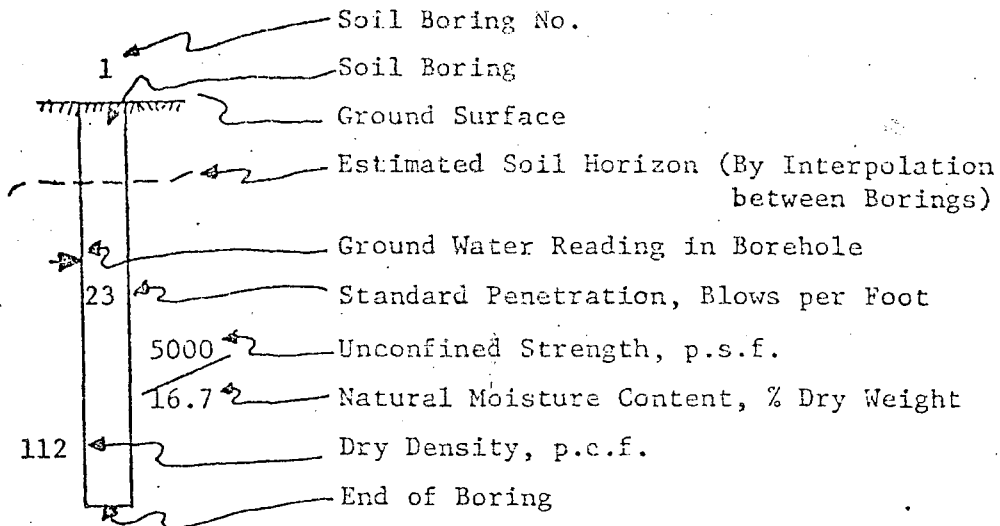


LEGEND:  
SEE ATTACHED LEGEND SHEET

NOTES:  
THE HORIZONTAL PROJECTIONS  
OF THE SOIL STRATA BETWEEN  
THE BORINGS HAVE BEEN OBTAINED  
BY INTERPOLATION BETWEEN THE  
BORINGS AND MAY NOT BE REPRESENTATIVE OF ACTUAL SOIL CONDITIONS.

SOIL PROF	
CHICAGO HEIGHT	
WALTER H FLOOR	
ENGINEERS - CIVIL	
VERT SCALE 1"=10'	30'
HOR SCALE 1"=100'	100'





Topsoil Loam



Bedrock (Dolomite)



Clay



Sand



Silt



Silty clay



Sandy clay



Fill



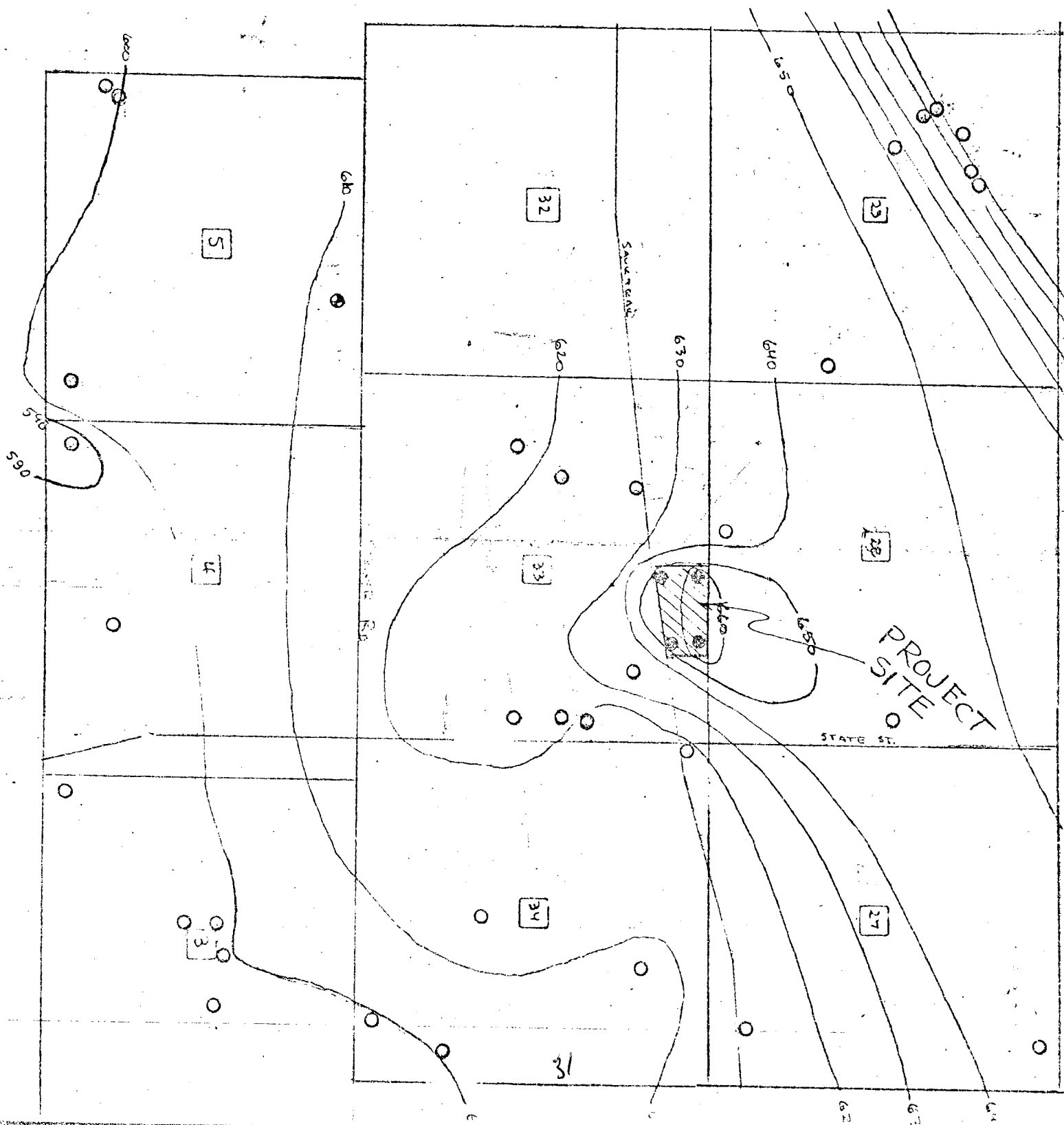
Gravel, Sand  
and  
Boulders



WELL POINT (PIEZOMETER) SCREEN

Soil Profile Legend

WALTER H. FLOOD & CO., INC.



# SIEVE ANALYSIS

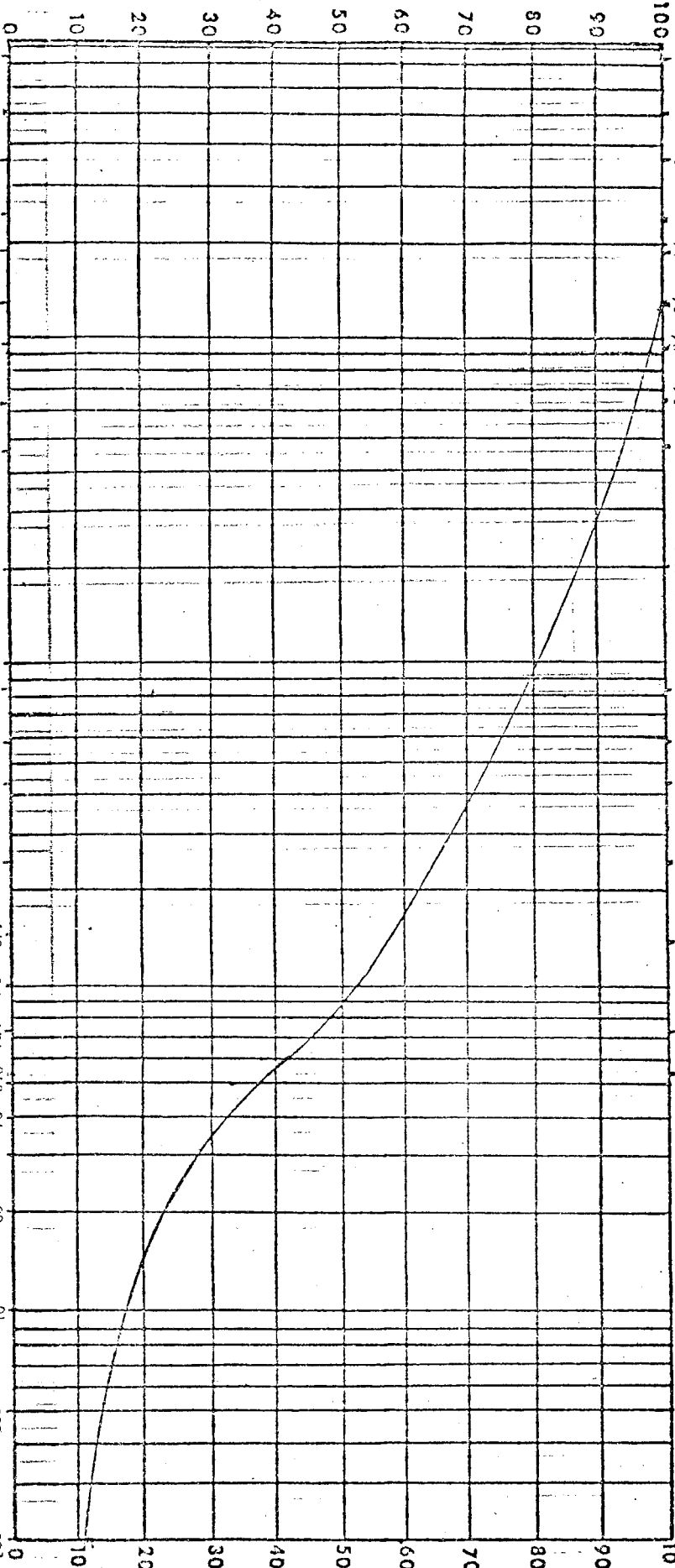
# HYDROMETER ANALYSIS

CLEAR SQUARE OPENINGS

U.S. STANDARD SERIES

3 in. 2 in. 1½ in. 1 in. ¾ in. ½ in. No. 4. No. 10 No. 20 No. 40 No. 60 No. 100 No. 200 No. 270

PERCENT PASSING BY WEIGHT



PARTICLE SIZE IN MILLIMETERS

LARGE GRAVEL	MEDIUM GRAVEL	SMALL GRAVEL	COARSE SAND	MEDIUM SAND	FINE SAND	SILT	CLAY
--------------	---------------	--------------	-------------	-------------	-----------	------	------

MORE NO. 4	SAMPLE NO. 25
DESCRIPTION	LEWONT DRIFT
CLASSIFICATION	(SAND LOAM)

LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
SHRINKAGE LIMIT	

SOIL GRADATION ANALYSIS
SOLID WASTE DISPOSAL FACILITY
SOUTH CHICAGO HEIGHTS, ILL
JOB NO. 72050668 DATE 6/22/72
WALTER H. FLOOD AND COMPANY INC.
CHICAGO, ILLINOIS 60637

# SIEVE ANALYSIS

# HYDROMETER ANALYSIS

## CLEAR SQUARE OPENINGS

## U.S. STANDARD SERIES

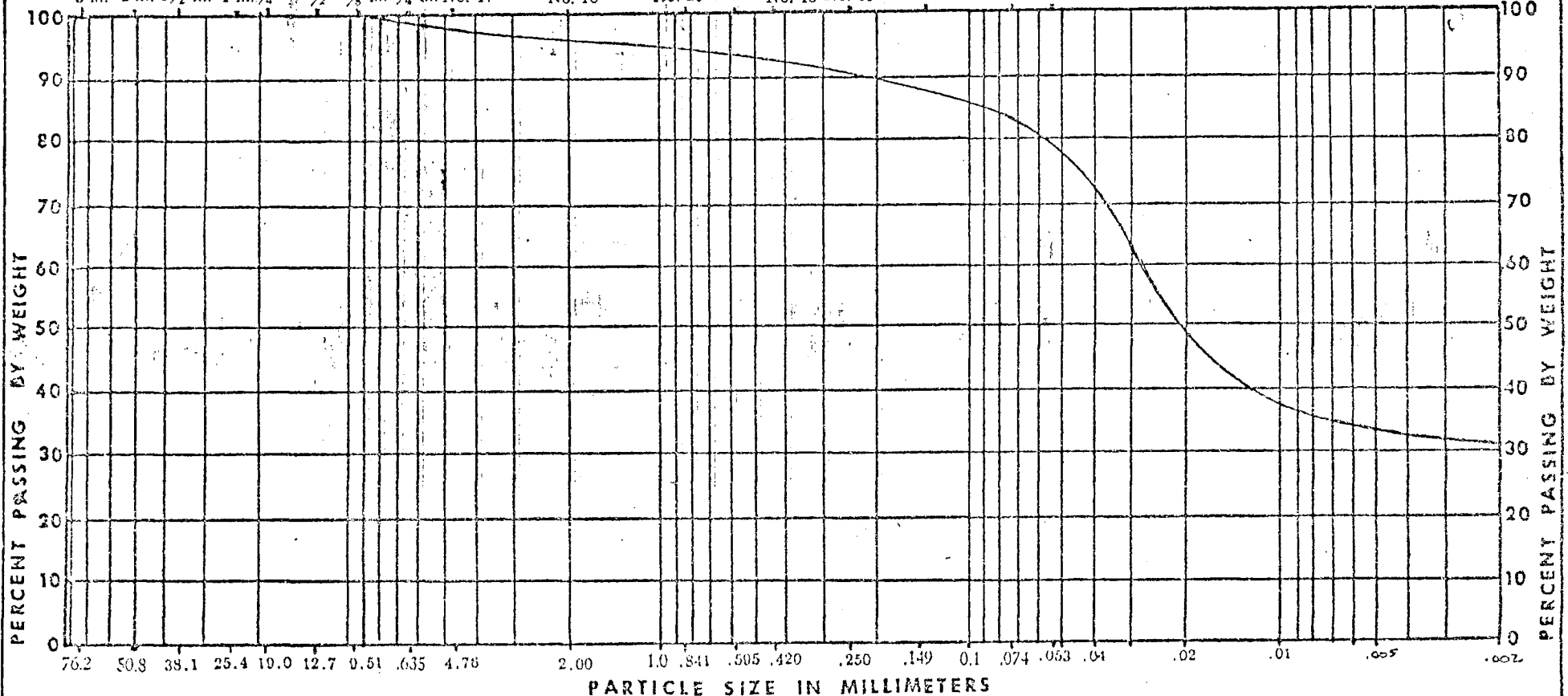
3 in. 2 in. 1½ in. 1 in. ¾ in. ½ in. ⅜ in. ¼ in. No. 4.

No. 10

No. 20

No. 40 No. 60 No. 100

No. 200 No. 270

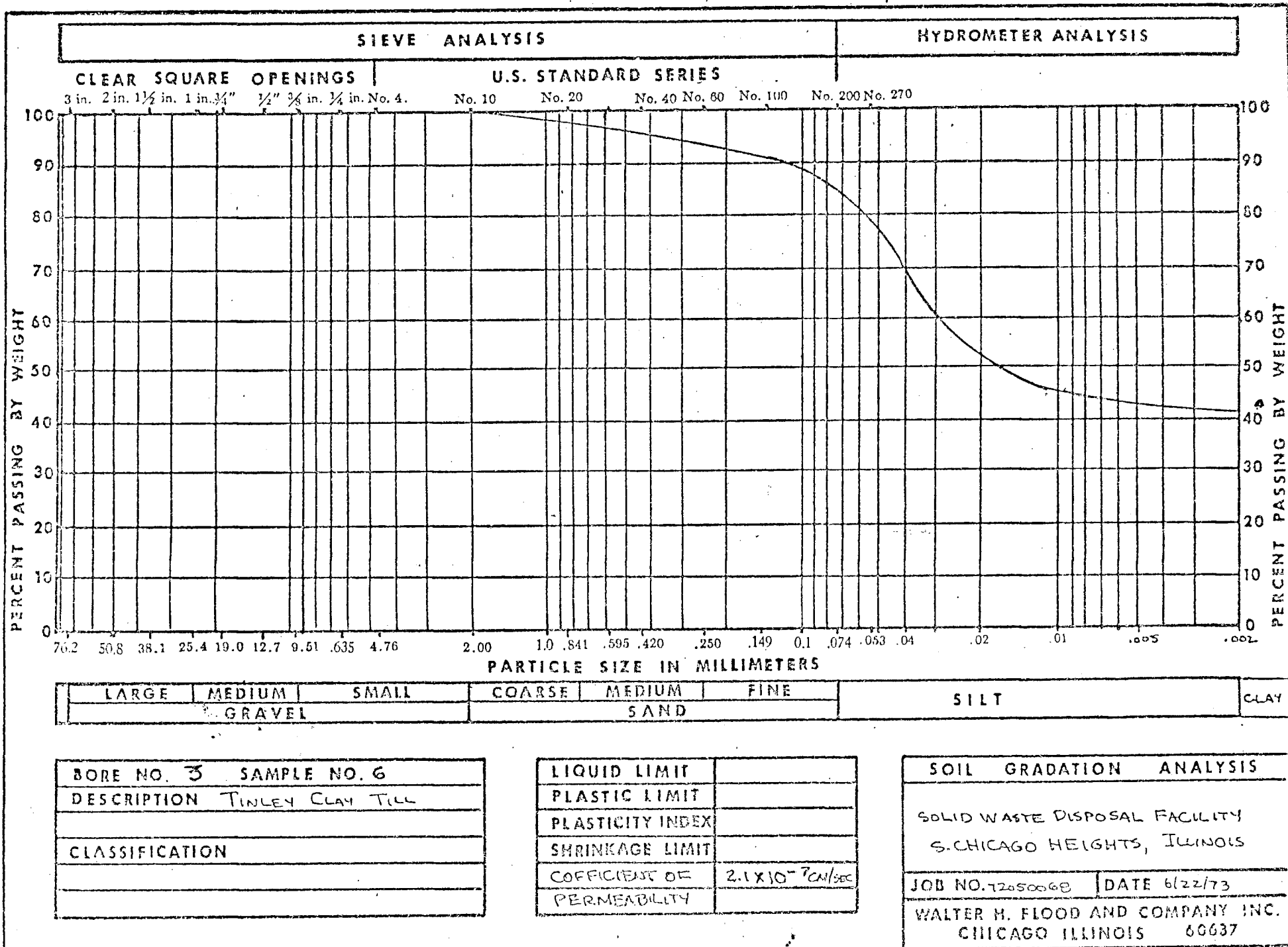


LARGE	MEDIUM	SMALL	COARSE	MEDIUM	FINE	SILT	CLAY
GRAVEL			SAND				

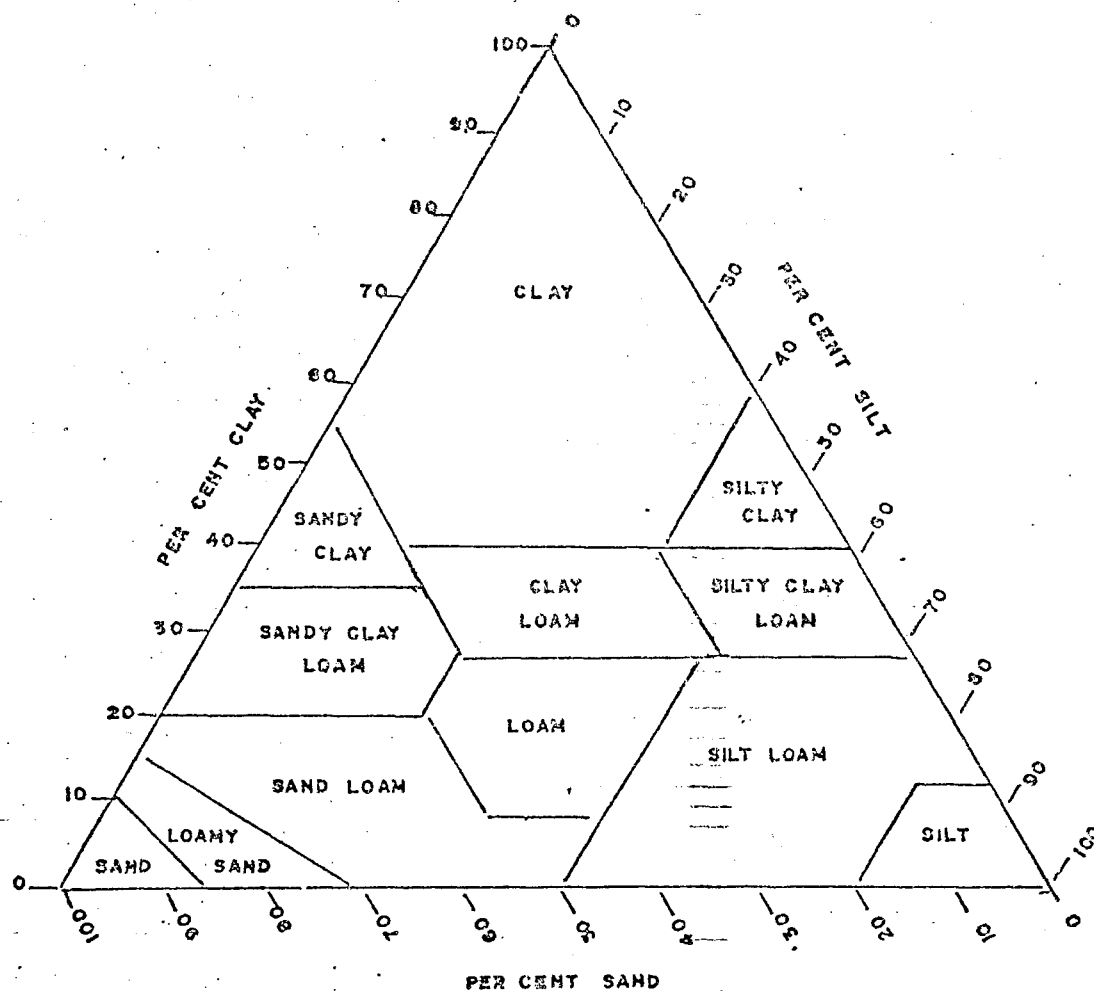
BORE NO. 2 SAMPLE NO. 5
DESCRIPTION VALPARAISO CLAY TIL (SILTY CLAY LOAM)
CLASSIFICATION

LIQUID LIMIT	
PLASTIC LIMIT	
PLASTICITY INDEX	
SHRINKAGE LIMIT	
COEFFICIENT OF PERMEABILITY	$4.8 \times 10^{-7}$ cm/sec

SOIL GRADATION ANALYSIS	
SOLID WASTE DISPOSAL FACILITY S. CHICAGO HEIGHTS, ILLINOIS	
JOB NO. 72050068	DATE 6/22/74
WALTER H. FLOOD AND COMPANY INC. CHICAGO ILLINOIS 60637	



34



SOIL TEXTURAL CLASSIFICATION  
U.S. DEPARTMENT OF AGRICULTURE

WALTER H. FLOOD & CO. INC.

		BY
JOB / LAB NO.		DATE

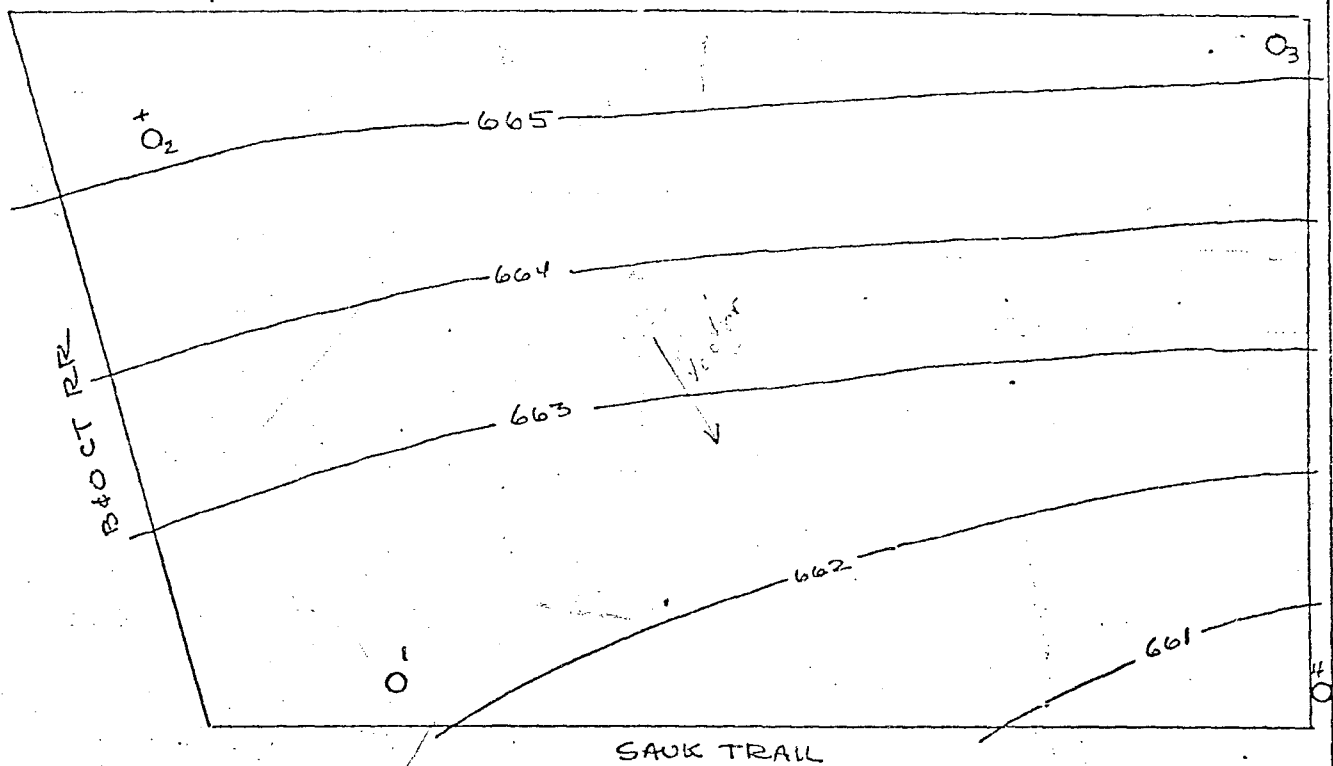
## APPLICATION FOR PERMIT TO DEVELOP AND OPERATE A SOLID WASTE MANAGEMENT SITE

Appendix

## Summary of Observation Well Data

Well No.	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Ground Elevation	697.1	694.9	713.4	712.6
Top of Well Elevation	698.2	695.1	715.5	716.6
Date Installed	5/30/72	5/24/72	5/26/72	5/31/72
Well Size	2" ID	2" ID	2" ID	2" ID
Well Casing	PVC	PVC	PVC	PVC
Screen Size	#10	#10	#10	#10
Screen Length	3'	3'	3'	3'
Tip Elevation	656.9	658.9	657.5	656.9
GWLS				
24 hours after installation	662.0	664.8	663.7	661.0
7/7/72	661.8	665.0	664.8	660.2
7/19/72	661.8	665.4	666.2	660.2
1/19/73	663.8	665.1	665.5	661.2
2/22/73	662.6	665.7	665.2	661.0
Est. rate slug test <sup>1</sup> 9PM	.07	.03	.64	.02
Date Sampled	2/23/73	2/23/73	2/23/73	Not tested

PER CENT SAND



# LEGEND

O PIEZOMETER

— 661 — PIEZOMETRIC GROUNDWATER SURFACE (DETERMINED BY AVERAGE READINGS FROM PIEZOMETER)



PIEZOMETRIC GROUND WATER SURFACE  
SILURIAN NIAGARAN AQUIFER  
SOLID WASTE DISPOSAL SITE  
S. CHICAGO HEIGHTS, ILLINOIS

WALTER H. FLOOD & CO. INC.

SCALE 1" = 200'

BY RJE

JOB / LAB NO. 1705006B

DATE 5/30/73



Procedure for Installation of Observation Wells

Scope: Two wells are to be installed at each corner of the pit. One well is to be installed a minimum of 5 feet into the bedrock, the other well is to be installed in water-bearing sand above the bedrock, or as designated. The wells are to be installed as observation wells for observation of water level and for sampling.

Procedures: Overburden is to be drilled by normal methods, and split tube samples are to be taken at 2.5 foot maximum intervals. A log of the overburden will be kept, recording soil descriptions, standard penetrations, ground water encountered.

Bedrock is to be cored, minimum diameter of 2 3/8" hole, for a minimum depth of 5 feet. Core shall be labeled and boxed for classification and identification.

A 2 1/2" I.D., 1'0" long #8 or #10 screened well point, and 2 1/2" I.D. riser pipe is to be placed in the hole. The test hole will be blown with air or back flushed with clean water. If water is used, backflushing will continue until clean water is obtained as determined by Chloride test. Clean torpedo sand will be placed in the hole to come to near the bedrock surface. If bore hole is dry, bentonite pellets <sup>soil mixture</sup> will be placed above the sand pack for a minimum of 5 feet or as determined by overburden soil conditions to water-bearing sand above. If hole is wet, a bentonite mud shall be mixed, and pumped to the bottom of the hole by using a drill rod or other pipe, and gradually withdrawn with drawing rod or pipe until "mud" seal is placed to sufficient thickness. A second 2 1/2" I.D., 3'0" #8 or #10 screened well point and riser shall be placed in the water bearing sand layer in the same drilled hole, or if conditions do not permit, in another drilled hole, a maximum of 2 feet from original hole. If another hole is used, the first riser shall be backfilled with sand to within 5 feet of grade before drilling another hole. Second well point shall be placed in the water bearing sand layer and blown out with air, or backflushed with clean water as previously detailed. The second well point will then be backfilled with clean sand to 5 feet from the ground surface. The top 5 feet of the test hole shall be filled with a 50% bentonite - soil mixture. All depths of installations shall be recorded to the nearest inch. Water level will be recorded in each until static levels are reached.

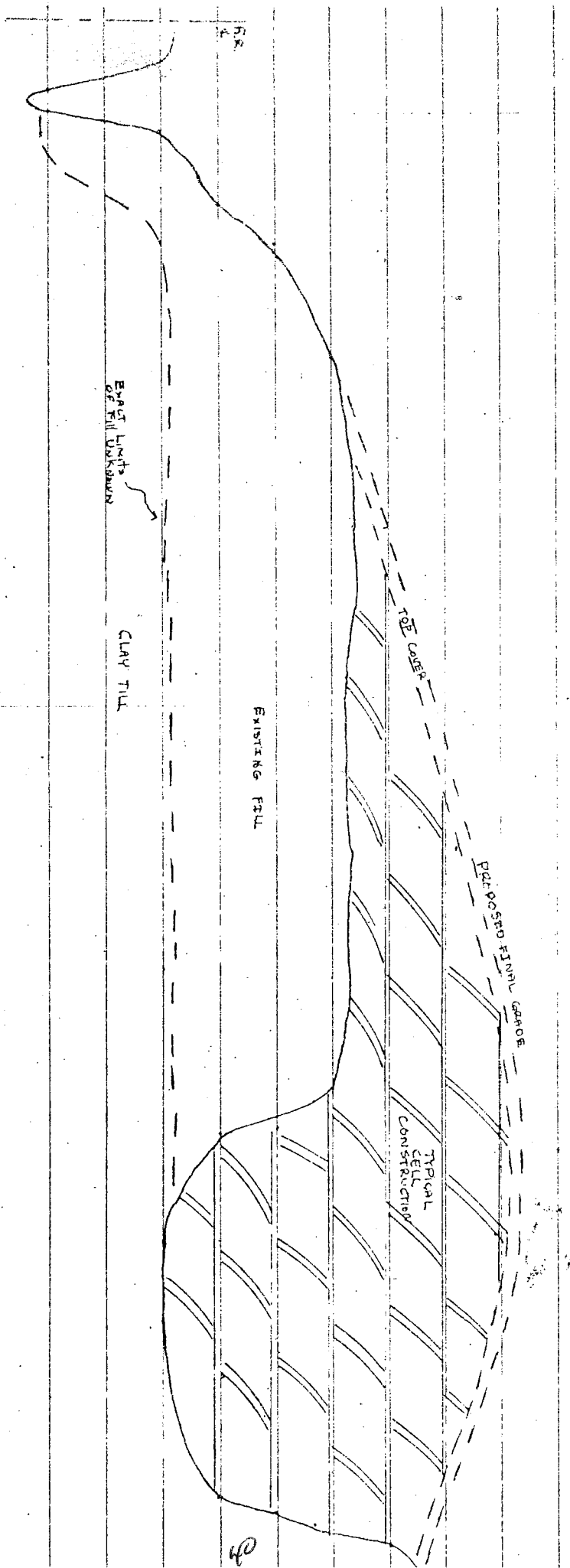
The rock well shall be pumped or bailed to lower the water level as much as possible, and readings taken on both wells. If pumping from the rock well affects the water level in the sand well, the sand well shall be pumped or bailed to lower the water level as much as possible, and readings taken on both wells.

WALTER H. FLOOD & CO., INC.

Procedure for Installation of Observation Wells (continued)

After lower level well, results are to be analyzed and, if determined that seal on lower well is not effective, the lower well is to be replaced.

After well pipes are to be capped, and concrete covers placed. If



TYPICAL CROSS SECTION	DATE
SOLID WASTE DISPOSAL	JUNE 13, 1973
S. CHICAGO HEIGHTS	BY
WALTER H. FLOOD & ASSOCIATES	W
ENGINEERS	
CHICAGO	
JOB NO. 7205062	

# The Chicago Heights Star

Published by Williams Press, Inc.  
Chicago Heights, Illinois 60411

AAC  
ATTACH COPY HERE

STATE OF ILLINOIS }  
COUNTY OF COOK } ss:

W. E. Williams, Jr., being  
duly sworn, says that he is the authorized agent of the  
Williams Press, a corporation, organized under and  
by virtue of the laws of the State of Illinois, publisher  
of the newspaper known as THE CHICAGO HEIGHTS  
STAR, published in the City of Chicago Heights. Said  
paper is of general circulation throughout said city,  
county, state, and has been published and circulated  
in said county and state more than six months prior  
to the first publication of said advertisement and that  
the advertisement, a copy whereof is hereof annexed  
was published in said newspaper, for \_\_\_\_\_  
one \_\_\_\_\_ weeks successively, that is to  
say in the issues of said newspaper dated respectively  
the

5th Day of December, A.D. 1974

The Chicago Heights Star is a newspaper as defined  
in Act - Chapter 100, Sections 1 and 5, Illinois Revised  
Statutes.

  
\_\_\_\_\_  
Authorized Agent

Subscribed and sworn to before me this \_\_\_\_\_

5th \_\_\_\_\_ day of \_\_\_\_\_ December

A.D. 19 74

  
\_\_\_\_\_  
Notary Public

## NOTICE

Pursuant to Public Act 77-1948  
Applicants: FIRST NATIONAL  
BANK IN CHICAGO HEIGHTS, as  
Trustee under Trust No. 162, and LO  
BUE EXCAVATING COMPANY

Legal Description: That part lying  
North of the center line of Sauk Trail  
Road and lying East of Easterly right-  
of-way of the Chicago, Milwaukee, St.  
Paul & Pacific Railroad, of the West  
Half of the Northeast Quarter of  
Section 33, Township 25 North, Range  
14, East of the Third Principal  
Meridian, in Cook County, Illinois.

Proposed Use of Site: Solid waste  
management site.

This notice is given pursuant to  
Public Act 77-1948 of the filing on or  
about December 16, 1974 of an ap-  
plication for a permit to co-locate the  
above described real estate as a solid  
waste management site with the  
Environmental Protection Agency.

FIRST NATIONAL BANK IN  
CHICAGO HEIGHTS

as Trustee under Trust No. 162 dated  
the

28th day of March, 1962, and LO BUE  
EXCAVATING COMPANY

By: Charles LoBue

December 3, 1974

Village of South Chicago Heights  
2729 Jackson  
South Chicago Heights, Ill. 60411

Gentlemen:

In accordance with the requirements of Public Act 77-1948 adopted by the General Assembly, you are hereby notified that an Application for Permit for the subject landfill will be submitted to the Illinois Environmental Protection Agency. Consideration of the Application will begin within ten days of the date of this notice.

Best Day of December, 1974

The legal description of the site is: That part lying North of the center line of Sauk Trail Road and lying East of Easterly right-of-way of the Chicago, Milwaukee, St. Paul & Pacific Railroad, of the West half of the Northeast quarter of Section 33, Township 35 North, Range 14, East of the Third Principal Meridian in Cook County, Illinois.

In Act Chapter 100, Sections 1 and 2

Statutes

Very truly yours,

FIRST NATIONAL BANK IN CHICAGO HEIGHTS,  
Trustee under Trust #162, and  
LO BUE EXCAVATING COMPANY,  
Applicants,

Authorized - per

Subscribed and sworn to before me this

Day of

By

*Angelo D. Liambone*

Attorney for Applicants

AAC:ko

December 3, 1974

Sanitary District of Bloom Township  
West End Avenue North  
Chicago Heights, Ill. 60411

Gentlemen:

In accordance with the requirements of Public Act 77-1948 adopted by the General Assembly, you are hereby notified that an Application for Permit for the subject landfill will be submitted to the Illinois Environmental Protection Agency. Consideration of the Application will begin within ten days of the date of this notice.

The legal description of the site is: That part lying North of the center line of Sauk Trail Road and lying East of Easterly right-of-way of the Chicago, Milwaukee, St. Paul & Pacific Railroad, of the West half of the Northeast quarter of Section 33, Township 35 North, Range 14, East of the Third Principal Meridian in Cook County, Illinois.

Very truly yours,

FIRST NATIONAL BANK IN CHICAGO HEIGHTS,  
Trustee under Trust #162, and  
LO BUE EXCAVATING COMPANY,  
Applicants,

By

Angelo D. Lambone  
Attorney for Applicants

AAC:ko

December 3, 1974

County Board  
County of Cook  
118 North Clark Street  
Chicago, Illinois 60602

Gentlemen: In accordance with the requirements of Public Act 77-1948 adopted by the General Assembly, you are hereby notified that an Application for Permit for the subject landfill will be submitted to the Illinois Environmental Protection Agency. Consideration of the Application will begin within ten days of the date of this notice. description of the site is: That part lying North of the center line of Sauk Trail Road and lying East of Easterly right-of-way of the Chicago, Milwaukee, St. Paul & Pacific Railroad, of the West half of the Northeast quarter of Section 33, Township 35 North, Range 14, East of the Third Principal Meridian in Cook County, Illinois.

Very truly yours,  
Trustee under Trust #162,  
LO BUE FIRST NATIONAL BANK IN CHICAGO  
APPT HEIGHTS, Trustee under Trust #162,  
and LO BUE EXCAVATING COMPANY,  
Applicants,

By

By

Angelo N. Lambone  
Attorney for Applicants

AAC:ko

December 3, 1974

Mr. Donald Arnell  
State Representative  
1010 Dixie Highway  
Chicago Heights, Ill. 60411

Dear Mr. Arnell:

In accordance with the requirements of Public Act 77-1948 adopted by the General Assembly, you are hereby notified that an Application for Permit for the subject landfill will be submitted to the Illinois Environmental Protection Agency. Consideration of the Application will begin within ten days of the date of this notice. The legal description of the site is: That part lying North of the center line of Sauk Trail Road and lying East of Easterly right-of-way of the Chicago, Milwaukee, St. Paul & Pacific Railroad, of the West half of the Northeast quarter of Section 33, Township 35 North, Range 14, East of the Third of Principal Meridian in Cook County, Illinois.

FIRST NATIONAL BANK IN CHICAGO HEIGHTS,  
Trustee under Trust #162, and  
LO BUE EXCAVATING COMPANY, Applicants,  
FIRST NATIONAL BANK IN CHICAGO  
HEIGHTS, Trustee under Trust #162  
and LO BUE EXCAVATING COMPANY  
By Ando N. Lambrose  
Attorney for Applicants

AAC:ko

By Ando N. Lambrose  
Attorney for Applicants

AAC:ko



December 3, 1974

Mr. Michael L. Getty  
State Representative  
14150 Chicago Road  
Dolton, Ill. 60419

Dear Mr. Getty:

In accordance with the requirements of Public Act 77-1948 adopted by the General Assembly, you are hereby notified that an Application for Permit for the subject landfill will be submitted to the Illinois Environmental Protection Agency. Consideration of the Application will begin within ten days of the date of this notice.

The legal description of the site is: That part lying North of the center line of Sauk Trail Road and lying East of Easterly Right-of-way of the Chicago, Milwaukee, St. Paul & Pacific Railroad, of the West half of the Northeast quarter of Section 33, Township 35 North, Range 14, East of the Third Principal Meridian, in Cook County, Illinois.

Very truly yours,

FIRST NATIONAL BANK IN CHICAGO HEIGHTS,  
Trustee under Trust #162, and  
LO BUE EXCAVATING COMPANY, Applicants,

By

Angelo D. Liambone  
Attorney for Applicants

AAC:ko

December 3, 1974

Mr. Thomas H. Miller  
State Representative  
837 East 162nd Street  
South Holland, Ill. 60473

Dear Mr. Miller:

In accordance with the requirements of Public Act 77-1948 adopted by the General Assembly, you are hereby notified that an Application for Permit for the subject landfill will be submitted to the Illinois Environmental Protection Agency. Consideration of the Application will begin within ten days of the date of this notice.

The legal description of the site is: That part lying North of the center line of Sauk Trail Road and lying East of Easterly right-of-way of the Chicago, Milwaukee, St. Paul & Pacific Railroad, of the West half of the Northeast quarter of Section 33, Township 35 North, Range 14, East of the Third Principal Meridian, in Cook County, Illinois.

Very truly yours,

FIRST NATIONAL BANK IN CHICAGO HEIGHTS,  
Trustee under Trust #162, and  
LO BUE EXCAVATING COMPANY, Applicants,

By

*Angelo A. Lambione*

Attorney for Applicants

AAC:ko